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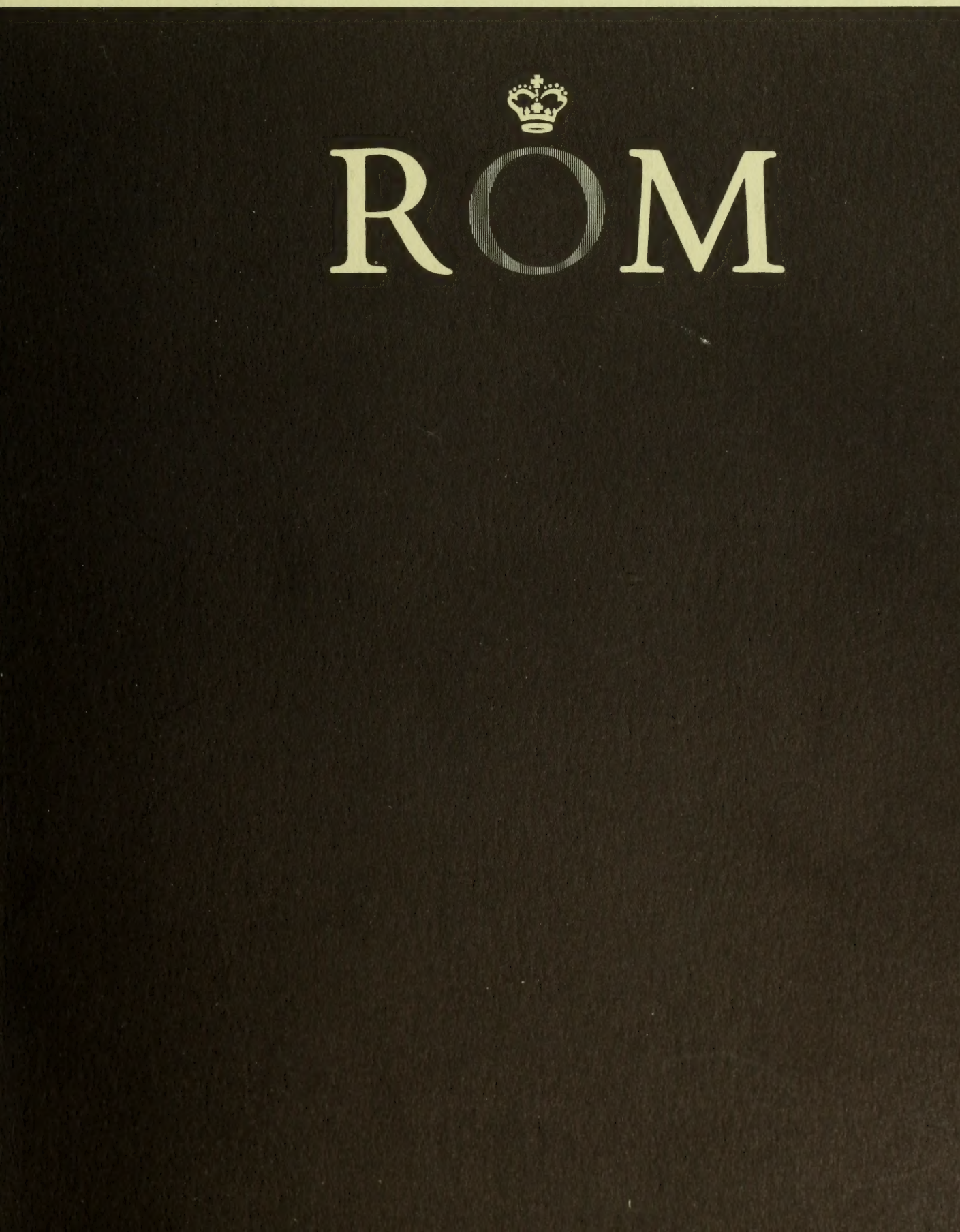

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BRIAN GEORGE GARDINER

Catalogue of Canadian fossil fishes

BRIAN GARDINER is on the staff of Queen Elizabeth College, University of London.

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PREFACE

In 1963 I was fortunate enough to be given leave of absence by Queen Elizabeth College to enable me to spend a year teaching in the University of Alberta, Edmonton. During that time I decided to catalogue the fossil fish localities within the confines of the Province of Alberta, and from this modest beginning the project grew into its present form in which I have endeavoured to cite all fossil fishes recorded from Canadian localities.

Certain standard abbreviations are used throughout this work; a large (C) indicates that so far the material concerned has been recorded only from Canada; a small (c) following a reference means that this is an important reference to Canadian material. A locality reference abbreviated thus:— SE 1/4 S.19, T.80, R.17, W. of 4th Meridian, would mean the southeast quarter of section 19, Township 80, Range 17, west of the 4th Meridian, while L. sd. 3 is the abbreviation used for Legal subdivision 3. Other notations such as Alberta (82-0-4) refer to the topographic map series 1/50,000

A full synonomy has been attempted for each species and as far as possible all references to that species have been incorporated. In a few cases only (viz. *Lamna appendiculata*) where a full reference list has not been compiled, this is indicated in the section headed remarks. Where it is known the location of the type material is given, while in the case of species described from places other than Canada, the location of corresponding Canadian material is cited. The entries have been arranged systematically according to their zoological classification and the classification adopted is set out in the systematic index.

The compiling of this catalogue was made possible by a generous grant from the University of Alberta which enabled me not only to search through much obscure literature but also to visit many interesting fossil localities.

Finally my thanks are due to Dr. Donald Ross of the University of Alberta for having given me the opportunity of spending such a pleasant year in Canada, and to him and to my many friends in the Zoology department of the University of Alberta I dedicate this work.

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Sub-Class OSTEOSTRACI

Order CEPHALASPIDA

Family Cephalaspidae

Genus *Cephalaspis* Agassiz 1835

Cephalaspis acadica Robertson (C)

1936 *Cephalaspis acadica* Robertson, p. 293, fig. 4 (c)
1952 *Cephalaspis acadica* Robertson: Denison, p. 162
1954 *Cephalaspis acadica* Robertson: Russell, p. 251, fig. 6 (c)

Locality: Gaspé sandstone, Campbellton, New Brunswick. Lower Devonian.

Type: Patten Collection, no. 10082, Dartmouth College, Hanover, New Hampshire. From the Lower Devonian of Campbellton.

Remarks: This species is probably synonymous with *C. campbelltonensis* Whiteaves.

Cephalaspis campbelltonensis Whiteaves (C)

1881f *Cephalaspis campbelltonensis* Whiteaves, p. 98 (c)
1883 *Cephalaspis campbelltonensis* Whiteaves: Ells, p. 9D (c)
1889 *Cephalaspis campbelltonensis* Whiteaves: Whiteaves, p. 92, pl. 10, fig. 2
1890 *Cephalaspis campbelltonensis* Whiteaves: Traquair, p. 21
1890 *Cephalaspis whiteavesi* Traquair, p. 21
1891 *Cephalaspis campbelltonensis* Whiteaves: Woodward, p. 190, pl. 9, fig. 5
1892a *Cephalaspis campbelltonensis* Whiteaves: Woodward, p. 4, pl. 1, fig. 6
1893a *Cephalaspis campbelltonensis* Whiteaves: Traquair, p. 147
1893a *Cephalaspis whiteavesi* Traquair: Traquair, p. 147
1895 *Cephalaspis campbelltonensis* Whiteaves: Jaekel, p. 161
1895 *Cephalaspis whiteavesi* Traquair: Jaekel, p. 161
1899 *Cephalaspis campbelltonensis* Whiteaves: Whiteaves, p. 226 (name only)
1902 *Cephalaspis campbelltonensis* Whiteaves: Hay, p. 341
1902 *Cephalaspis campbelltonensis* Whiteaves: Patten, p. 186
1905 *Cephalaspis campbelltonensis* Whiteaves: Lambe, pp. 15, 33, 40
1907 *Cephalaspis campbelltonensis* Whiteaves: Eastman, p. 12
1907 *Cephalaspis campbelltonensis* Whiteaves: Whiteaves, p. 259
1908 *Cephalaspis campbelltonensis* Whiteaves: Eastman, p. 275
1929 *Cephalaspis campbelltonensis* Whiteaves: Hay, p. 638

1932a *Cephalaspis campbelltonensis* Whiteaves: Stensiö, pl. 45, fig. 2
1935 *Cephalaspis campbelltonensis* Whiteaves: Alcock, p. 80 (name only)
1936 *Cephalaspis campbelltonensis* Whiteaves: Robertson, p. 294
1954 *Cephalaspis campbelltonensis* Whiteaves: Russell, p. 250, fig. 4 (c)
1954 *Cephalaspis campbelltonensis* Whiteaves: Waterston, p. 1
1955 *Cephalaspis campbelltonensis* Whiteaves: Denison, p. 158

Locality: South side of the Restigouche River, about ½ mile west of Campbellton, New Brunswick. In the argillaceous beds. Lower Devonian (Alcock, 1935, suggests Middle Devonian).

Type: Head shield in the National Museum of Canada, Ottawa, from Campbellton. Traquair's type of *C. whiteavesi* (1890) is a head shield in the Royal Scottish Museum, and also comes from Campbellton.

Cephalaspis canadensis Robertson (C)

1936 *Cephalaspis canadensis* Robertson, p. 292, fig. 3 (c)
1952 *Cephalaspis canadensis* Robertson: Denison, p. 162
1954 *Cephalaspis canadensis* Robertson: Russell, p. 251, fig. 5 (c)

Locality: In all probability from near a river beach at a railway cut, west of Campbellton Station, New Brunswick. Lower Devonian.

Type: Patten collection no. 10081, Dartmouth College, Hanover, New Hampshire, from the Lower Devonian of Campbellton, New Brunswick.

Remarks: This species is probably synonymous with *C. campbelltonensis* Whiteaves.

Cephalaspis dawsoni Lankester (C)

1870 *Cephalaspis dawsoni* Lankester, p. 397, figs. 1–3 (c)
1870a *Cephalaspis dawsoni* Lankester, p. 223 (c)
1870 *Cephalaspis*, Dawson, p. 271
1874 *Cephalaspis dawsoni* Lankester: Barkas, p. 549
1899 *Cephalaspis dawsoni* Lankester: Whiteaves, p. 224 (name only)
1902 *Cephalaspis dawsoni* Lankester: Hay, p. 341
1905 *Cephalaspis dawsoni* Lankester: Lambe, pp. 14, 15, 33, 40
1907 *Cephalaspis dawsoni* Lankester: Eastman, p. 13
1908 *Cephalaspis dawsoni* Lankester: Eastman, p. 275
1929 *Cephalaspis dawsoni* Lankester: Hay, p. 639
1936 *Cephalaspis dawsoni* Lankester: Robertson, p. 295
1947 *Cephalaspis dawsoni* Lankester: Russell, p. 1 (c)
1954 *Cephalaspis dawsoni* Lankester: Russell, p. 250, fig. 3 (c)
1955 *Cephalaspis dawsoni* Lankester: Denison, p. 458

Locality: North side of Gaspé Bay, Quebec. Gaspé sandstone. Lower Devonian.

Type: Redpath Museum, McGill University, Montreal, head and trunk from Gaspé Bay.

Cephalaspis jexi Traquair (C)

1893a *Cephalaspis jexi* Traquair, p. 147
1899 *Cephalaspis jexi* Traquair: Whiteaves, p. 227 (name only)

1902 *Cephalaspis jexi* Traquair: Hay, p. 341
1905 *Cephalaspis jexi* Traquair: Lambe, pp. 15, 33, 40
1907 *Cephalaspis jexi* Traquair: Whiteaves, p. 260 (c)
1907 *Cephalaspis jexi* Traquair: Eastman, p. 13
1929 *Cephalaspis jexi* Traquair: Hay, p. 659
1935 *Cephalaspis jixi* Traquair: Alcock, p. 80 (name only) (c)
1936 *Cephalaspis jexi* Traquair: Robertson, p. 295
1937 *Cephalaspis jexi* Traquair: Robertson, p. 85
1947 *Cephalaspis jexi* Traquair: Russell, p. 4
1952a *Cephalaspis jexi* Traquair: Denison, p. 284
1954 *Cephalaspis jexi* Traquair: Russell, p. 251, fig. 7 (c)
1954 *Cephalaspis jexi* Traquair: Waterston, p. 1
1955 *Cephalaspis jexi* Traquair: Denison, p. 458

Locality: On the south side of the Restigouche River, about a ½ mile west of Campbellton, New Brunswick. From argillaceous beds. Lower Devonian (Alcock, 1935, suggests base of Middle Devonian).

Type: Head shield in the Royal Scottish Museum, Edinburgh, 1887.20.53, from the Lower Devonian of Campbellton, New Brunswick.

Cephalaspis novaescotiae Denison (C)

1955 *Cephalaspis novaescotiae* Denison, p. 454, figs. 111, 112 (c)

Locality: A small knoll on the west side of McArras Brook road, 130 yards south of the shore road and about 3 miles southwest of Arisaig, Antigonish County, Nova Scotia. About 100′ above bed 44 of Fletcher's section (Ami, 1901), thus presumably bed 53; or conversely bed 22 of Leonard's section (Leonard, 1951). Approximately 760′ above the lowermost exposure of the Knoydart formation. Lower Devonian (Lower Dittonian).

Type: Chicago Museum of Natural History, Chicago, PF. 1212, dorsal half of cephalic shield in counterpart, from the Lower Devonian of McArras Brook.

Cephalaspis westolli Russell (C)

1947 *Cephalaspis* sp. Russell, p. 2 (c)
1954 *Cephalaspis westolli* Russell, p. 246, figs. 1, 2 and 11 (c)

Locality: 2300′ above base of Gaspé sandstone series (Battery Point formation) on sea cliff 1350′ east of the wharf at D'Aiguillon, County of Gaspé South, Quebec. Lower or possibly Middle Devonian (Russell, 1947).

Type: Royal Ontario Museum, Toronto, no. 1478, an incomplete rim of a head shield from the ventral surface, from the east of D'Aiguillon.

Cephalaspis sp.

1892a *Cephalaspis* sp., Woodward, p. 5 (c)
1901a *Cephalaspis* sp., Ami, p. 309 (c)
1905 *Cephalaspis* sp., Lambe, pp. 33, 40
1907 *Cephalaspis* sp., Whiteaves, p. 261
1907 *Cephalaspis* sp., Eastman, p. 13

1908 *Cephalaspis* sp., Eastman, p. 275
1908 *Cephalaspis* sp., Ells, p. 66 (c)
1911 *Cephalaspis* sp., Williams, p. 244
1913 *Cephalaspis* sp., Twenhofel, p. 303 (c)
1914 *Cephalaspis* n. sp.? Williams, pp. 21, 75, 134 (c)
1955 *Cephalaspis* sp., Denison, pp. 449, 458
1957 *Cephalaspis* sp., Denison, p. 413

Localities: 1. Campbellton, New Brunswick. Gaspé formation, Lower Devonian.

2. McArras Brook, north of Antigonish, Nova Scotia. From a grey sandstone (ash bed) outcropping to the south of the shore road along the west bank of McArras Brook. Knoydart formation. Lower Devonian.

Family Ateleaspidae

Genus *Ateleaspis* Traquair 1889

Atelaespis n. sp.

1912 *Atelaspis* n. sp., Patten, pp. 357, 362, fig. 242 (c)
1952 *Atelaspis* n. sp., Patten, Denison, p. 162
1957 Osteostraci gen. et sp. indet., Ørvig, p. 371

Locality: Maquasha West, on the southwest side of the Gaspé Peninsula on the shore of Escuminac Bay, Quebec. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Material: Patten Collection, no. 10086, Dartmouth College, Hanover, New Hampshire.

Incertae Sedis

Genus *Alaspis* Ørvig 1957

Alaspis macrotuberculata Ørvig (C)

1957 *Alaspis macrotuberculata* Ørvig, p. 371, fig. 1D (c)
1958 *Alaspis* sp. Stensiö (in Grassé), p. 220
1960 *Alaspis* sp. Ørvig (in Jarvik), p. 70, fig. 21

Locality: Grey layers, Maguasha West, on the southwest side of the Gaspé Peninsula, on the shore of Escuminac Bay, Quebec. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Type: Swedish Museum of Natural History, Stockholm. Detached plates from cephalic shield, from Maguasha West.

Genus *Escuminaspis* Ørvig 1957

Escuminaspis laticeps (Traquair) (C)

1890 *Cephalaspis laticeps* Traquair, p. 16 (c)
1891 *Cephalaspis laticeps* Traquair: Woodward, p. 192
1899 *Cephalaspis laticeps* Traquair: Whiteaves, p. 227 (name only)
1902 *Cephalaspis laticeps* Traquair: Hay, p. 341
1905 *Cephalaspis laticeps* Traquair: Lambe, pp. 16, 33, 40
1907 *Cephalaspis laticeps* Traquair: Whiteaves, p. 248 (c)
1907 *Cephalaspis laticeps* Traquair: Eastman, p. 16

1908 *Cephalaspis laticeps* Traquair: Eastman, p. 280
1912 *Cephalaspis laticeps* Traquair: Lambe, p. 4 (name only)
1913 *Cephalaspis laticeps* Traquair: Clarke, p. 113 (c)
1929 *Cephalaspis laticeps* Traquair: Hay, p. 639
1935 *Cephalaspis laticeps* Traquair: Alcock, p. 88 (name only)
1936 *Cephalaspis laticeps* Traquair: Robertson, pp. 288, 295
1937 *Cephalaspis laticeps* Traquair: Robertson, p. 85
1952a *Cephalaspis laticeps* Traquair: Denison, p. 284
1954 *Cephalaspis laticeps* Traquair: Russell, p. 254, fig. 9 (c)
1954 *Cephalaspis laticeps* Traquair: Waterston, p. 1
1957 *Escuminaspis laticeps* (Traquair) Ørvig, p. 371, figs. $1c_1$, $1c_2$ (c)

Locality: Maguasha West, on the southwest side of the Gaspé Peninsula, on the shore of Escuminac Bay, Quebec. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Type: Cranial shield in the Royal Scottish Museum, Edinburgh, 1887.20.43, from the Upper Devonian of Escuminac Bay.

Escuminaspis patteni (Robertson) (C)

1912 *Cephalaspis* sp. ? Patten, p. 357, fig. 234 (c)
1932a *Cephalaspis* sp. Patten, Stensiö, p. 89 (footnote)
1936 *Cephalaspis patteni* Robertson, p. 288, fig. 1 (c)
1937 *Cephalaspis patteni* Robertson: Robertson, p. 85
1941 *Cephalaspis patteni* Robertson: Robertson, p. 322 (c)
1952 *Cephalaspis patteni* Robertson: Denison, p. 162
1954 *Cephalaspis patteni* Robertson: Russell, p. 254, fig. 8 (c)
1957 *Escuminaspis laticeps* (Traquair) Ørvig, p. 372

Locality: Maguasha West, on the southwest side of the Gaspé Peninsula, on the shores of Escuminac Bay, Quebec. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Type: Patten Collection, no. 10080, Dartmouth College, Hanover, New Hampshire, from the Upper Devonian of Maguasha West.

Remarks: This species is probably synonymous with *Escuminaspis laticeps* (Traquair) as suggested by Ørvig (1957: 372).

Escuminaspis rosamundae (Robertson) (C)

1937 *Cephalaspis rosamundae* Robertson, p. 85, pl. 4 (c)
1952a *Cephalaspis rosamundae* Robertson: Denison, p. 284
1954 *Cephalaspis rosamundae* Robertson: Russell, p. 254, fig. 10 (c)
1957 *Escuminaspis rosamundae* (Robertson) Ørvig, p. 372

Locality: Maguasha West, on the southwest side of the Gaspé Peninsula, on the shores of Escuminac Bay, Quebec. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Type: Museum of Comparative Zoology, Harvard, Cambridge, no. 6502, from Maguasha West, part and counterpart of a flattened incomplete head.

Remarks: This species is probably synonymous with *Escuminaspis laticeps* (Traquair).

Escuminaspis sp.

1958 *Escuminaspis* sp. Ørvig, Stensiö (in Grassé), p. 220 (name only) (c)

Locality: Presumably Maguasha West, on the southwest side of the Gaspé Peninsula, on the shore of Escuminac Bay, Quebec. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Material: Swedish Museum of Natural History, Stockholm.

Sub-Class ANASPIDA

Order ANASPIFORMES

Family Birkeniidae

Genus *Ctenopleuron* Matthew 1907

Ctenopleuron nerepisense Matthew (C)

1907 *Ctenopleuron nerepisense* Matthew, p. 7, pl. 1 (c)
1910 *Ctenopleuron nerepisense* Matthew: Woodward, p. 31
1920 *Birkenia* sp. ? Woodward, p. 27
1924 *Ctenopleuron nerepisense* Matthew: Kiaer, pp. 124, 134
1929 *Ctenopleuron nerepisense* Matthew: Hay, p. 665
1951 *Ctenopleuron nerepisense* Matthew: Denison, p. 385

Locality: Cunningham Brook, near Nerepis Station, Kings County, New Brunswick. Long Reach formation. Middle Silurian (Mackenzie, 1951).

Type: Location unknown to author but it came from the Middle Silurian of Cunningham Brook

Remarks: This species is very close to the genus *Birkenia*, to which in all probability it belongs.

Family Endeiolepidae

Genus *Endeiolepis* Stensiö 1939

Endeiolepis aneri Stensiö (C)

1939 *Endeiolepis aneri* Stensiö, p. 18, pl. 1, text-fig. 7 (c)
1957 *Endeiolepis aneri* Stensiö: Ørvig, p. 371, figs. $1A_1$, $1A_2$
1958 *Endeiolepis aneri* Stensiö: Stensiö (in Grassé), fig. 125

Locality: Presumably Maguasha West, on the southwest side of the Gaspé Peninsula, on the shore of Escuminac Bay, Quebec. From a green-grey, fine grained sandstone, rich in lime and plant remains. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Type: Swedish Museum of Natural History, Stockholm, no. C.1307 an imperfect fish, lacking head, from Escuminac Bay.

Family Euphaneropsidae

Genus *Euphanerops* Woodward 1900

Euphanerops longaevus Woodward (C)

1900 *Euphanerops longaevus* Woodward, p. 416, pl. 10, figs. 1, 1a-b (c)
1901b *Euphanerops longaevus* Woodward: Ami, p. 174
1902 *Euphanerops longaevus* Woodward: Woodward, p. 54

1902 *Euphanerops longaevus* Woodward: Hay, p. 341
1905 *Euphanerops longaevus* Woodward: Lambe, pp. 16, 33, 40
1907 *Euphanerops longaevus* Woodward: Whiteaves, p. 248 (c)
1907 *Euphanerops longaevus* Woodward: Eastman, pp. 16, 31
1908 *Euphanerops longaevus* Woodward: Eastman, pp. 74, 280
1913 *Euphanerops longaevus* Woodward: Clarke, p. 113 (c)
1920 *Euphanerops longaevus* Woodward: Woodward, p. 28 (name only)
1924 *Euphanerops longaevus* Woodward: Kiaer, pp. 29, 56, 58, 95, 125, 136
1928 *Euphanerops longaevus* Woodward: Stetson, p. 467
1929 *Euphanerops longaevus* Woodward: Hay, p. 636
1935 *Euphanerops longaevus* Woodward: Alcock, p. 88 (name only) (c)
1939 *Euphanerops longaevus* Woodward: Stensiö, p. 3, fig. 1
1957 *Euphanerops longaevus* Woodward: Ørvig, p. 371, fig. 1B

Locality: Maguasha West, on the southwest side of the Gaspé Peninsula, on the shores of Escuminac Bay, Quebec. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Type: Nearly complete fish in the British Museum (Natural History), P.6813, from Maguasha West.

Remarks: This is the last known occurrence of an anaspid.

Anaspid Remains

1958 Anaspidida n. gen. A & sp. A., Thorsteinsson, p. 60 (c)

Locality: Rookery Creek, northwest coastal region of Cornwallis Island, Northwest Territories. Early Devonian.

Material: National Museum of Canada, Ottawa.

Class Pteraspidomorphi

Sub-Class HETEROSTRACI

Order ASTRASPIDIFORMES

Family Astraspididae

Genus *Astraspis* Walcott 1892

Astraspis sp.

1958 *Astraspis* sp., Sinclair, p. 1644 (c)

Localities: 1. Basal Trenton beds near La Malbaie, on the north shore of the St. Lawrence River, 80 miles below Quebec. Ordovician.

2. Middle Ordovician beds in the Dease River region of northern British Columbia.

Material: National Museum of Canada, Ottawa.

Order PSAMMOSTEIFORMES

Sub-order Tesseraspidida

Family Tesseraspididae

Genus *Kallostrakon* Lankester 1870

cf. *Kallostrakon podura* Lankester (C)

1958 cf. *Kallostrakon podura* Lankester, 1870, Thorsteinsson, p. 77 (c)

Locality: Read Bay, Cornwallis Island, Northwest Territories. Snowblind Bay formation. Early Devonian.

Material: National Museum of Canada, Ottawa, from Read Bay.

Family Corvaspididae

Genus *Corvaspis* Woodward 1934

Corvaspis sp.

1963 cf. *Corvaspis* Thorsteinsson (in Fortier *et al.*), pp. 122, 125 (c)

Locality: From a small canyon 6 miles southeast of Cape Anne, western Somerset Island, Northwest Territories. In the basal beds of the Peel Sound formation, where about 350′ of medium bedded sand and siltstones outcrop, and the locality is 100′ from the top of the section in a bed of red dolomitic siltstone. Upper Devonian.

Material: National Museum of Canada, Ottawa.

Sub-order Psammosteida

Family Psammosteidae

Genus *Psammosteus* Agassiz 1844

Psammosteus arcticus Kiaer (C)

1915 *Psammosteus arcticus* Kiaer, pp. 23, 26, pl. 2, figs. 5–7, pl. 3, figs. 1–4, pl. 4, figs. 1–5 (c)
1929 *Psammosteus arcticus* Kiaer: Hay, p. 637
1957 *Psammosteus arcticus* Kiaer: Ørvig, p. 377
1965 *Psammolepis arctica* (Kiaer) Tarlo, p. 90 (but non pl. 4, figs. 4, 5 of Kiaer 1915)

Locality: Fish horizon, Skrap Valley, west side of Goose Fiord, Ellesmere Island, Northwest Territories. Okse Bay formation (sandstone series D). Lower, Upper Devonian.

Type: Palaeontological Museum, Oslo, from Skrap Valley.

Psammosteus complicatus Kiaer (C)

1915 *Psammosteus complicatus* Kiaer, pp. 26, 36, pl. 2, fig. 8, pl. 5, figs. 1–3, pl. 6, figs. 1–3, text-fig. 5 (c)
1929 *Psammosteus complicatus* Kiaer: Hay, p. 637
1957 *Psammosteus complicatus* Kiaer: Ørvig, p. 377
1963 *Psammosteus*—McLaren (in Fortier *et al.*), p. 329
1965 *Rohonosteus complicatus* (Kiaer) Tarlo, pp. 90, 117

Locality: Fish horizon, Skrap Valley, west side of Goose Fiord, Ellesmere Island, Northwest Territories, Okse Bay formation (sandstone series D). Lower, Upper Devonian.

Type: Palaeontological Museum, Oslo, from Skrap Valley.

Psammosteus kiaeri Tarlo (C)

1915 *Psammosteus arcticus* Kiaer, p. 25, pl. 5, figs. 4, 5 (non pl. 2, figs. 5–7, pl. 3, figs. 1–4) (c)
1965 *Psammosteus kiaeri* Tarlo, pp. 90, 117

Locality: Fish horizon, Skrap Valley, west side of Goose Fiord,

Ellesmere Island, Northwest Territories. Okse Bay formation (sandstone series D). Lower, Upper Devonian.

Type: Palaeontological Museum, Oslo, from Skrap Valley. (Kiaer, 1915, pl. 4, figs. 4, 5, branchial plate named *Psammosteus arcticus*.)

Order PTERASPIDIFORMES

Sub-order Pteraspidida

Family Pteraspididae

Genus *Pteraspis* Kner 1847

Pteraspis novaescotiae White (C)

1899 *Pteraspis* sp., Dawson, p. 182 (c)
1901 *Pteraspis crouchii* Lankester, Ami, pp. 309, 311 (doubtful) (c)
1911 *Pteraspis* sp., Williams, p. 244
1913 *Pteraspis* cf. *crouchii* Lankester, Twenhofel, p. 303 (c)
1914 *Pteraspis* cf. *crouchii* Lankester: Williams, pp. 21, 75 (c)
1935 *Pteraspis novae-scotiae* White, p. 444 (c)
1950 *Pteraspis novae-scotiae* White: White, p. 86
1955 *Pteraspis* cf. *crouchii* Lankester: Denison, p. 449
1955 *Pteraspis novae-scotiae* White: Denison, p. 452
1964 *Pteraspis novae-scotiae* White: Dineley, p. 217 (c)

Locality: McArras Brook, north of Antigonish, Nova Scotia. From a grey sandstone (ash bed) outcropping to the south of the shore road along the west bank of McArras Brook. Knoydart formation. Early Devonian.

Type: British Museum (Natural History), no. P.91172, a poorly preserved ventral disc, from McArras Brook.

Pteraspis whitei Denison (C)

1955 *Pteraspis (Simopteraspis) whitei* Denison, p. 450, figs. 109, 110 (c)
1957 *Pteraspis whitei* Denison, Denison, p. 412
1964 *Pteraspis (Simopteraspis) whitei* Denison: Dinely, p. 217 (c)

Locality: A small knoll on the west side of McArras Brook road, 130 yds. south of the shore road and about 3 miles southwest of Arisaig, Antigonish County, Nova Scotia. Knoydart formation, about 100′ above bed 44 of Fletcher's section (Ami, 1901), presumably his bed 53; or conversely bed 22 of Leonard (1951: 72). About 560′ above the lowermost exposure of the Knoydart.

Type: Chicago Museum of Natural History, Chicago, no. PF. 1002, a well-preserved dorsal shield from McArras Brook.

Pteraspis sp. indet.

1954 Ostracoderm head shields, Thorsteinsson & Fortier, p. 13 (c)
1958 *Pteraspis* sp. indet. cf. *P. podolica* (Zych), Thorsteinsson, p. 77 (c)

Locality: Read Bay, Cornwallis Island, Northwest Territories. Snowblind Bay formation. Early Devonian.

Material: National Museum of Canada, Ottawa.

Order CYATHASPIDIFORMES

Sub-order Cyathospidida

Family Cyathaspididae

Sub-family Tolypelepidinae

Genus *Tolypelepis* Pander 1856

Tolypelepis n. sp.

1958 *Tolypelepis* n. sp., Thorsteinsson, p. 47 (c)
1964 *Tolypelepis* sp., Denison, p. 353

Locality: Shellabear Creek, from near the top of the Allen Bay formation (*Monograptus riccartonensis* zone), and also from member C of the Cape Phillips formation on the north coast, Cornwallis Island, Northwest Territories. Middle Silurian.

Material: National Museum of Canada, Ottawa.

Sub-family Cyathaspidinae

Genus *Ptomaspis* Denison 1963

Ptomaspis canadensis Denison (C)

1963 *Ptomaspis canadensis* Denison, p. 116, figs. 64, 65 (c)
1964 *Ptomaspis canadensis* Denison: Denison, p. 354, figs. 97B, 108, 109

Locality: 100′ north of the Beaver River, southeastern Yukon (60° 27′ N; 125° 47.5′ W). From limestones and graptolitic shales. Early Devonian.

Type: Princeton University Museum no. 17090, a nearly complete dorsal shield from the Beaver River.

Genus *Cyathaspis* Lankester 1865

Cyathaspis acadica (Matthew) (C)

1886 *Pteraspis? acadica* Matthew, p. 252, fig. 1 (c)
1887a "The Acadian Fish", Matthew, p. 323, fig. 1 (c)
1887b *Diplaspis acadica* (Matthew) Matthew, p. 67, fig. 1 (c)
1888 *Diplaspis acadica* (Matthew): Matthew, p. 49, pl. 4, figs. 1–4
1891 *Diplaspis acadica* (Matthew): Matthew, p. 61
1891 *Cyathaspis acadica* (Matthew) Woodward, p. 173
1892 *Diplaspis acadica* (Matthew): Claypole, p. 547
1898a *Diplaspis acadica* (Matthew): Whiteaves, p. 656
1902 *Cyathaspis acadica* (Matthew): Hay, p. 340
1905 *Cyathaspis acadica* (Matthew): Lambe, pp. 34, 40 (c)
1907 *Cyathaspis acadica* (Matthew): Eastman, p. 12
1907 *Diplaspis acadica* (Matthew): Matthew, p. 9
1908 *Cyathaspis acadica* (Matthew): Eastman, pp. 72, 280
1912 *Diplaspis acadica* (Matthew): Lambe, p. 3
1924 *Cyathaspis (Diplaspis) acadica* (Matthew): Kiaer, p. 124
1926 *Coccosteus acadica* (Matthew) Moodie, p. 67
1928 *Cyathaspis acadica* (Matthew): Stetson, p. 225 (name only)
1929 *Cyathaspis acadica* (Matthew): Hay, p. 635
1935 *Cyathaspis acadica* (Matthew): Kiaer & Heintz, p. 34

1956 *Diplaspis acadica* (Matthew): Denison, p. 385
1964 *Cyathaspis acadica* (Matthew): Denison, p. 359, fig. 3

Locality: Cunningham Brook, near Nerepis, Kings County, New Brunswick. Jones Creek formation. Late Silurian.

Type: Royal Ontario Museum, Toronto, no. 1117, incomplete but associated dorsal and ventral shields, from Cunningham Brook.

Cyathaspis sp.

1963 *Cyathaspis*? sp., McLaren (in Fortier *et al.*), p. 324 (c)

Locality: Borgen, Ellesmere Island, Northwest Territories. From black petroliferous limestone of the Bird Fiord formation. Middle Devonian.

Material: National Museum of Canada, Ottawa, from Borgen, Middle Devonian.

Genus *Vernonaspis* Flower & Wayland-Smith 1952

Vernonaspis bamberi Denison (C)

1963 *Vernonaspis bamberi* Denison, p. 110, figs. 60, 61 (c)
1964 *Vernonaspis bamberi* Denison: Denison, p. 379, fig. 121 (c)

Locality: 100′ north of Beaver River, south eastern Yukon (60° 27′ N, 125° 47.5′ W). From limestones and graptolitic shales. Early Devonian (Early Downtonian).

Type: Princeton University Museum, no. 17081, a nearly complete, crushed, dorsal shield from the Beaver River.

Vernonaspis major Denison (C)

1963 *Vernonaspis major* Denison, p. 110, figs. 62, 63 (c)
1964 *Vernonaspis major* Denison: Denison, p. 380, fig. 122 (c)

Locality: 100′ north of Beaver River, south eastern Yukon (60° 27′ N, 125° 47.5′ W). From limestones and graptolitic shales. Early Devonian (Early Downtonian).

Type: Princeton University Museum, no. 17104, a complete dorsal shield, from the Beaver River.

Vernonaspis sekwiae Denison (C)

1964 *Vernon sekwiae* Denison, p. 383, figs. 100c, 123, 124 (c)

Locality: Top of Mt. Sekwi, beside Keele River, Northwest Territories (63° 28′ N, 128° 40′ W—California Standard Company, locality 2–29–61, horizon 4994′–5080′). Late Silurian (probably late Ludlovian).

Type: National Museum of Canada, Ottawa, no. 10036, a dorsal shield complete anteriorly, from Mt. Sekwi.

Genus *Pionaspis* Denison 1964

Pionaspis acuticosta Denison (C)

1964 *Pionaspis acuticosta* Denison, p. 388, figs. 129, 130 (c)

Locality: About 30 miles northwest of Muncho Lake, British

Columbia, (59° 07′30″ N, 126° 22′ W). Early Devonian. (Locality R5–61, 2100 of California Standard Company.)

Type: National Museum of Canada, Ottawa, no. 10034, an incomplete dorsal shield, from 30 miles N.W. of Muncho Lake.

Pionaspis planicosta Denison (C)

1964 *Pionaspis planicosta* Denison, p. 386, figs. 126–128 (c)

Locality: About 30 miles northwest of Muncho Lake, British Columbia (59° 07′30″, 126° 22′ W). Early Devonian. (Locality R5–61, 2100 of California Standard Company.)

Type: National Museum of Canada, Ottawa, no. 10035, an incomplete dorsal shield, from 30 miles N.W. of Muncho Lake.

Genus *Listraspis* Denison 1964

Listraspis canadensis Denison

1964 *Listraspis canadensis* Denison, p. 391, figs. 131–133 (c)

Locality: About 30 miles northwest of Muncho Lake, British Columbia (59° 07′30″ N, 126° 22′ W.) Early Devonian. (Locality R5–61, 2100′ of California Standard Company.)

Type: National Museum of Canada, Ottawa, no. 10030, an incomplete dorsal shield showing the inner surface, from Muncho Lake.

Sub-family Irregulareaspidinae

Genus *Dikenaspis* Denison 1963

Dikenaspis yukonensis Denison (C)

1963 *Dikenaspis yukonensis* Denison, p. 117, figs. 66, 67 (c)

1964 *Dikenaspis yukonensis* Denison: Denison, p. 396, figs. 97E, 101A, 134, 135 (c)

Locality: Some 100′ north of the Beaver River, south eastern Yukon (60° 27′ N, 125° 47.5′ W). From limestones and graptolitic shales. Early Devonian?

Type: Princeton University Museum, no. 10788, a nearly complete dorsal shield and the posterior part of a ventral shield, from the early Devonian of Beaver River.

Genus *Dinaspidella* Denison 1963

Dinaspidella sp.

1964 cf. *Dinaspidella* sp., Denison, p. 400 (c)

Locality: Immediately west of Snake River, northern Yukon (65° 22′ N, 133° 30′ W). From about 70′ above the top of the "Ronning" dolomite (locality 2 FX 36A of California Standard Co.). Early Devonian?

Material: Chicago Museum of Natural History, Chicago, PF. 3871, broken and incomplete dorsal and ventral shields, associated, from the early Devonian of Snake River.

Sub-family Paraspidinae

Genus *Ariaspis* Denison 1963

Ariaspis ornata Denison (C)

1963 *Ariaspis ornata* Denison, p. 120, figs. 68, 69 (c)
1964 *Ariaspis ornata* Denison: Denison, p. 425, figs. 148, 149 (c)

Locality: Limestones and graptolitic shales, some one hundred feet north of Beaver River, southeastern Yukon (60° 27′ N, 125° 47.5′ W). Early Devonian (Early Downtonian)?

Type: Princeton University Museum, no. 17103, a complete dorsal shield, from the Beaver River.

Genus *Anglaspis* Jaekel 1927

Anglaspis expatriata Denison (C)

1964 *Anglaspis expatriata* Denison, p. 431, fig. 151 (c)

Locality: Top of Mount Sekwi, beside the Keele River, Northwest Territories (68° 28′ N, 128° 40′ W). California Standard Company, locality Z 29–61, 4474. Early Devonian.

Type: National Museum of Canada, Ottawa, no. 10038. A nearly complete dorsal shield exposed on the inner surface, from Mount Sekwi.

Anglaspis sp.

1954 Ostracoderm head shields, Thorsteinsson & Fortier, p. 13 (c)
1958 *Anglaspis* n. sp., Thorsteinsson, p. 77 (c)
1963 cf. *Anglaspis*, Thorsteinsson in Fortier *et al.*, pp. 122, 125 (c)
1964 *Anglaspis* sp., Denison, p. 433

Localities: 1. Read Bay, Cornwallis Island, Northwest Territories. Snowblind Bay formation, Early Devonian.

2. Basal beds of the Peel Sound formation, five miles west of Cunningham Inlet, Western Somerset Island, Northwest Territories. Seventy feet above base of Peel Sound formation, Early Devonian.

Material: National Museum of Canada, Ottawa.

Genus Homalaspidella Strand 1934

Homalaspidella borealis Denison (C)

1963 *Homalaspidella borealis* Denison, p. 123, figs. 70–73 (c)
1964 *Homalaspidella borealis* Denison: Denison, p. 422, figs. 145–147 (c)

Locality: Some 100′ north of the Beaver River, south eastern Yukon (60° 27′ N, 125° 47.5′ W). From limestones and graptolitic shales. Early Devonian?

Type: Princeton University Museum, no. 17101, a dorsal shield incomplete posteriorly, from the Beaver River.

Poraspidinae indet.

1964 Poraspidinae indet., Denison, p. 445 (c).

Locality: About 70′ above the top of "Ronning" dolomite, immediately west of Snake River, northern Yukon (65° 22′ N; 133° 30′ W). Early Devonian. (Locality 2 Fx 36A of California Standard Company.)

Material: Chicago Museum of Natural History, Chicago, no. PF 3872, a ventral shield.

Sub-family Ctenaspidinae

Genus *Ctenaspis* Kiaer 1930

Ctenaspis sp.

1954 Ostracoderm head shields, Thorsteinsson & Fortier, p. 13 (c)
1958 *Ctenaspis* n.sp. aff. *C. dentatus* Kiaer, Thorsteinsson, p. 76 (c)
1964 *Ctenaspis* sp., Denison. p. 442

Locality: Read Bay, Cornwallis Island, Northwest Territories. Snowblind Bay formation. Early Devonian.

Material: National Museum of Canada, Ottawa.

Cyathaspididae indet.

1954 Ostracoderm headshields, Thorsteinsson & Fortier, p. 13 (c)
1958 Cyathaspididae gen. & sp. indet., Thorsteinsson, pp. 68, 77 (c)
1964 Undetermined Cyathaspididae from Arctic Canada, Denison, p. 447

Localities: 1. Read Bay, Cornwallis Island, Northwest Territories. Snowblind Bay formation. Early Devonian?

2. Head of Snowblind Bay, Cornwallis Island, Northwest Territories. Read Bay formation. Late Silurian?

Material: National Museum of Canada, Ottawa.

1958 New genus and species of Cyathaspididae, Thorsteinsson, p. 55 (c)
1963 New genus and species of Cyathaspididae, Thorsteinsson, p. 227 (c)

Localities: 1. Shellabear Creek, Cornwallis Island, Northwest Territories. Read Bay formation (member A). Late Silurian?

2. Near Ptarmigan Lake in the Douro Range. Devon Island, Northwest Territories. Douro formation. Late Silurian?

Material: National Museum of Canada, Ottawa.

1958 Cyathaspididae n. gen. A and sp. B., Thorsteinsson, pp. 54, 72, 100 (c)

Localities: 1. Goodsir Creek, Cornwallis Island, Northwest Territories. Read Bay formation (member A). Late Silurian?

2. Snowblind Creek, Cornwallis Island, Northwest Territories. Cape Phillips formation (member C). Late Silurian?

1963 Porapsinae, Thorsteinsson & Tozer (in Fortier *et al.*) p. 122 (c)

Locality: 6 miles southeast of Cape Anne, Somerset Island, Northwest Territories. Peel Sound formation. Locality is 100′ from top of 350′ of medium bedded sand and siltstones, in a thin bed of red dolomitic siltstone.

Material: National Museum of Canada, Ottawa.

1963 Cyathaspidae, Thorsteinsson (in Fortier *et al.*) pp. 56, 124, 125 (c)

Locality: West shore of Browne Bay, Prince of Wales Island, Northwest Territories. Peel Sound formation (sandstone facies). Early Devonian? Also recorded from Somerset Island, Northwest Territories.

Material: National Museum of Canada, Ottawa.

1963 Undetermined Cyathaspididae, Denison, p. 127, figs. 74–77 (c)
1964 Undetermined Cyathpididae, Denison, p. 445

Locality: Beaver River, south eastern Yukon (60° 27′ N, 125° 47.5′ W, some 100′ north of Beaver River). In limestones and graptolitic shales. Early Devonian?

Material: Princeton University Museum.

1964 Cyathaspidinae indet., Denison, p. 447 (c)

Locality: Immediately west of Snake River, northern Yukon (65° 22′ N, 133° 30′ W). 70′ above top of "Ronning" dolomite. Early Devonian? (Locality 2 Fx 36A of California Standard Company.)

Material: Chicago Museum of Natural History, Chicago no. PF 3873.

Order TRAQUAIRASPIDIFORMES

Family Traquairaspididae

Genus *Traquairaspis* Kiaer 1932

?*Traquairaspis angusta* Denison (C)

1963 ?*Traquairaspis angusta* Denison, p. 133, figs. 78, 79 (c)
1964 *Yukonaspis angusta* (Denison) Obruchev, p. 63
1964 *Yukonaspis angusta* (Denison) Stensiö, p. 363, fig. 123A

Locality: 100′ north of Beaver River, southeastern Yukon (60° 27′ N, 125° 47.5′ W). From limestones and graptolitic shales. Early Devonian (Early Downtonian)

Type: Princeton University Museum, no. PU 17388, a ventral disc from the Beaver River.

Traquairaspis denisoni Dinely (C)

1964 *Traquairaspis denisoni* Dineley, p. 211, pl. 38, text-figs. 1–4 (c)

Locality: Thirty miles northwest of Muncho Lake, British Columbia (mile 450 on the Alaska Highway); 59° 07′ N, 126° 22′ W. Lower Dittonian. Lower Devonian.

Type: National Museum of Canada, Ottawa, no. 10371, an internal mould of the dorsal disc, with parts of adhering plate, from near Muncho Lake.

Traquairaspis symondsi (Lankester)

1868 *Cyathaspis symondsi* Lankester, p. 27, pl. 6, fig. 5
1898 *Psammosteus anglicus* Traquair, p. 67, pl. 1, figs. 1, 2
1935 *Phialaspis symondsi* (Lankester) Wills, p. 439, text-fig. 4, pl. 5, figs. 6, 7, pl. 6, pl.-fig. 5.
1964 *Traquairaspis symondsi* (Lankester) Dinely, p. 214, pl. 39, text-figs. 5, 6 (c)

Locality: Field immediately south of the main Arisaig-Merigonish road, 250 yds. east of McArras Brook, Antigonish County, Nova Scotia. From a shallow excavation for road metal, and in a hard, dark red, silty mudstone, 450′ above the base of the Knoydart formation. Lower Devonian.

Type: Geological Survey Museum, London, holotype nos. 31380, 5, 6, from an unknown locality in the west of England.

Canadian material: National Museum of Canada, Ottawa, nos. 10373, 74, 75, from McArras Brook.

Remarks: The literature on this species is large and only the salient references are given.

Traquairaspis cf. *symondsi* (Lankester)

1901 *Psammosteus* sp. cf. *Psammosteus anglicus* Traquair, Ami, pp. 309, 311 (c)
1913 *Psammosteus* cf. *anglicus* Traquair, Twenhofel, p. 303 (c)
1914 *Psammosteus* cf. *anglicus* Traquair: Williams, pp. 21, 76 (c)
1929 *Psammosteus anglicus*? Traquair; Hay, p. 637
1955 *Psammosteus* cf. *anglicus* Traquair: Denison, p. 449
1964 *Psammosteus* cf. *P. anglicus* Traquair: Dinely, pp. 210, 217 (c)

Locality: McArras Brook, north of Antigonish, Nova Scotia. From a grey sandstone (ash bed) outcropping to the south of the shore road along the west bank of McArras and Trenholm Brooks. Knoydart formation. Early Devonian.

Material: National Museum of Canada, Ottawa, from McArras Brook.

Heterostraci indet.

Localities: 1. South of Long Mountain on the Gundahoo River, British Columbia (126.5° W, 59° 10′ N. Rabbit River Sheet). Devonian.

2. Laudon, a mile or so north of Muncho Lake alongside the main highway, British Columbia. Late Silurian?

1958 Heterostracan fragment, Thorsteinsson, pp. 49, 64 (c)
1963 Heterostracan fragments, Fortier *et al.* p. 299 (c)

Localities: 1. Northside of Rendalen Valley, southern Ellesmere Island, Northwest Territories. Devon Island formation. Silurian.

2. Goodsir Creek, central-east coast of Cornwallis Island, Northwest Territories. Read Bay beds (A & B). Devonian?

Material: National Museum of Canada, Ottawa.

1963 Heterostraci indet., Denison, p. 136, figs. 80–82 (c)
1965 *Tesseraspis denisoni* Tarlo, pp. 67, 111 (for Denison's fragment type D)

Locality: Beaver River, south eastern Yukon (60° 27′ N, 125° 47.5′ W., 100′ north of Beaver River). Early Devonian limestones and graptolitic shales. Early Downtonian.

Material: Princeton University Museum.

Sub-Class COELOLEPIDA

Family Thelodontidae

Genus *Thelodus* Agassiz in Murchison 1839

Thelodus macintoshi Stetson (C)

1928 *Thelodus macintoshi* Stetson, p. 223, figs. 1–6 (c)

1929 *Thelodus macintoshi* Stetson: Hay, p. 633
1956 *Thelodus macintoshi* Stetson: Denison, p. 385

Locality: Cunningham's Brook, Nerepis, Kings County, New Brunswick. Long Reach formation. Middle Silurian (Mackenzie, 1951).

Type: Scales in the Museum of Comparative Zoology, Harvard, Cambridge, from Cunningham's Brook.

Thelodus sp.

1907 Scale of *Thelodus* sp., Eastman, p. 13 (c)

Locality: Nictaux Falls, Nova Scotia. Oriskany sandstone. Upper Silurian?

1956 *Thelodus* scales, Denison, p. 385.

Locality: Cunningham's Brook, Nerepis, Kings County, New Brunswick. Long Reach formation. Middle Silurian (Mackenzie, 1951).

Super-Class ELASMOBRANCHIOMORPHI

Class Arthrodira

Sub-Class ANTIARCHI

Order ASTEROLEPIFORMES

Family Asterolepidae

Genus *Bothriolepis* Eichwald 1840

Bothriolepis canadensis (Whiteaves) (C)

1880 *Pterichthys* (*Bothriolepis*) *canadensis* Whiteaves, pp. 132, 135 (c)
1881a *Pterichthys* (*Bothriolepis*) *canadensis* Whiteaves, p. 26 (c)
1881d *Pterichthys canadensis* Whiteaves: Whiteaves, p. 28 (c)
1883 *Pterichthys canadensis* Whiteaves: Claypole, p. 278
1883 *Pterichthys canadensis* Whiteaves: Ells, p. 10D (c)
1885 *Bothriolepis canadensis* (Whiteaves) Cope, p. 290 and woodcut
1887 *Bothriolepis canadensis* (Whiteaves): Cope, p. 323, fig. 62
1887 *Pterichthys* (*Bothriolepis*) *canadensis* Whiteaves: Whiteaves, p. 101, pls. 6–9 (c)
1888a *Bothriolepis canadensis* (Whiteaves): Traquair, p. 509
1888b *Bothriolepis canadensis* (Whiteaves): Traquair, p. 496, pl. 18, fig. 6
1889a *Bothriolepis canadensis* (Whiteaves): Whiteaves, p. 91
1891 *Bothriolepis canadensis* (Whiteaves): Woodward, p. 224, fig. 34, p. 228
1892a *Bothriolepis canadensis* (Whiteaves): Woodward, p. 484, fig. 2
1893 *Bothriolepis canadensis* (Whiteaves): Williams, p. 286, figs. 3–5
1898 *Bothriolepis canadensis* (Whiteaves): Cope, p. 16, fig. 2
1898 *Bothriolepis canadensis* (Whiteaves): Woodward, p. 14, figs. 13–15
1899 *Bothriolepis canadensis* (Whiteaves): Whiteaves, p. 226 (name only)
1900b *Bothriolepis canadensis* (Whiteaves): Woodward, p. 9

1902 *Bothriolepis canadensis* (Whiteaves): Hay, p. 343
1903a *Bothriolepis canadensis* (Whiteaves): Jaekel, pp. 42, 57
1904 *Bothriolepis canadensis* (Whiteaves): Patten, p. 113, figs. 1–6
1904 *Bothriolepis canadensis* (Whiteaves): Traquair, p. 109, figs. 57–59
1904 *Bothriolepis canadensis* (Whiteaves): Bridge, p. 534
1904 *Bothriolepis canadensis* (Whiteaves): Eastman, p. 254
1905 *Bothriolepis canadensis* (Whiteaves): Lambe, pp. 14, 16, 34, 40
1906 *Bothriolepis canadensis* (Whiteaves): Patten, pp. 140, 284
1906 *Bothriolepis canadensis* (Whiteaves): Husakof, p. 142, fig. 14
1907 *Bothriolepis canadensis* (Whiteaves): Eastman, p. 43, figs. 10–12
1907 *Bothriolepis canadensis* (Whiteaves): Whiteaves, p. 249, pls. 1, 2
1907 *Bothriolepis canadensis* (Whiteaves): Abel, pp. 160, 166
1908 *Bothriolepis canadensis* (Whiteaves): Eastman, pp. 83, 280, figs. 12–14
1908 *Bothriolepis canadensis* (Whiteaves): Jordan, p. 807
1909 *Bothriolepis canadensis* (Whiteaves): Goodrich, p. 206, fig. 180
1911 *Bothriolepis canadensis* (Whiteaves): Hoffmann, p. 300, figs. 16, 23
1912 *Bothriolepis canadensis* (Whiteaves): Abel, p. 598
1912 *Bothriolepis canadensis* (Whiteaves): Lambe, p. 4
1912 *Bothriolepis canadensis* (Whiteaves): Patten, pp. 368, 483, figs. 247–248
1912 *Bothriolepis canadensis* (Whiteaves): Stromer, p. 40, fig. 52
1913 *Bothriolepis canadensis* (Whiteaves): Clarke, p. 113 (c)
1915 *Bothriolepis canadensis* (Whiteaves): Kiaer, p. 41, pl. 7, fig. 8
1916 *Bothriolepis canadensis* (Whiteaves): Hoffmann, p. 491, figs. 1–4
1917 *Bothriolepis canadensis* (Whiteaves): Eastman, p. 240
1918 *Bothriolepis canadensis* (Whiteaves): Hussakof & Bryant, p. 23
1919 *Bothriolepis canadensis* (Whiteaves): Abel, p. 91, fig. 52
1923 *Bothriolepis canadensis* (Whiteaves): Moodie, p. 320, pl. 64
1924 *Bothriolepis canadensis* (Whiteaves): Bryant, p. 54, pl. 2
1924 *Bothriolepis canadensis* (Whiteaves): Rogers, p. 546
1925 *Bothriolepis canadensis* (Whiteaves): Stensiö, p. 1
1926 *Bothriolepis canadensis* (Whiteaves): Moodie, p. 67, pl. 6, text-fig. 1
1929 *Bothriolepis canadensis* (Whiteaves): Hay, p. 642
1930 *Bothriolepis canadensis* (Whiteaves): Stetson, pl. 6
1932 *Bothriolepis*—Patten, p. 517, fig. 5
1935 *Botreolepis canadensis* (Whiteaves): Alcock, p. 88 (c)
1938 *Bothriolepis canadensis* (Whiteaves): Sohn, p. 111, fig. 2
1938 *Bothriolepis stensiöi* Sohn, p. 111, fig. 1 (c)
1938 *Bothriolepis stensiöi* Sohn = *Bothriolepis canadensis* (Whiteaves): Robertson, p. 299
1941 *Bothriolepis canadensis* (Whiteaves): Denison, p. 553, figs. 1–10
1941 *Bothriolepis canadensis* (Whiteaves): Gross, p. 5, pls. 16, 17, text-figs. 44E, 45E.
1942 *Bothriolepis canadensis* (Whiteaves): Gross, p. 206, pls. 11, 12, text-figs. 1–3, 5

1948 *Bothriolepis canadensis* (Whiteaves): Stensiö, p. 391
1951 *Bothriolepis canadensis* (Whiteaves): Denison, p. 224
1951 *Bothriolepis canadensis* (Whiteaves): Ørvig, fig. 18E, pl. 4, fig. 3
1952 *Bothriolepis canadensis* (Whiteaves): Denison, p. 164
1957 *Bothriolepis canadensis* (Whiteaves): Ørvig, p. 371, fig. 1, J1–3.

Locality: Maguasha West, on the southwest side of the Gaspé Peninsula on the shore of Escuminac Bay, Quebec. The fish beds are in high cliffs of 100′ or more, of essentially grey sand-shales and sandstones. The fish are in nodules and concretions in the blocking parts of the shale beds. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Types: National Museum of Canada, Ottawa, syntypes nos. 4425, 4326 and 4427. Nearly complete armoured portion from Maguasha West. Sohn's (1938) type of *Bothriolepis stensiöi* is in Columbia University, New York, this also came from Maguasha West.

Bothriolepis cf. *hydrophila*

1915 *Bothriolepis* cf. *hydrophila* Agassiz: Kiaer, p. 39, pl. 7, figs. 1–6 (c)
1929 *Bothriolepis hydrophila*? Agassiz: Hay, p. 643
1948 *Bothriolepis* spp., Stensiö, p. 400
1957 *Bothriolepis* spp., Ørvig, p. 377
1963 *Bothriolepis*, Mclaren in Fortier *et al.*, p. 529 (c)

Localities: 1. Dark shists, Galgeodden, Ellesmere Island, Upper Devonian.

2. Fish horizon, Skrap Valley, Ellesmere Island. Okse Bay formation (sandstone series D of Kiaer, 1915). Lower, Upper Devonian.

Material: Palaeontological Museum, Oslo.

Bothriolepis traquairi Bryant (C)

1924 *Bothriolepis traquairi* Bryant, p. 54, pls. 1, 2 (c)
1929 *Bothriolepis traquairi* Bryant: Hay, p. 643
1935 *Bothriolepis traquairi* Bryant: Alcock, p. 88 (c)
1938 *Bothriolepis traquairi* Bryant: Sohn, p. 111 (name only)
1948 *Bothriolepis traquairi* Bryant: Stensiö, p. 400, text-fig. 214
1951 *Bothriolepis traquairi* Bryant: Denison, p. 228
1957 *Bothriolepis traquairi* Bryant: Ørvig, p. 371

Locality: Maguasha West, on the southwest side of the Gaspé Peninsula on the shore of Escuminac Bay, Quebec. The fish beds are in high cliffs of 100′ or more, of essentially grey sandshales and sandstones. The fish are in nodules and concretions in the blocking parts of the shale beds. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Type: One time at the Buffalo Museum, Buffalo, N.Y., ventral armour, from Maguasha West (probably on loan).

cf. *Bothriolepis*

1915 *Bothriolepis* (?) sp., Kiaer, p. 43, pl. 8, fig. 7 (c)
1963 cf. *Bothriolepis*, Patterson & Storey, p. 292 (c)
1963 Fish plates, Patterson & Storey, fig. 4
1964 cf. *Bothriolepis*, Langston (Private communication)

Localities: 1. Northeast spur of End Mountain, Alberta (Approx. T.26, R.9, W. of 5th Meridian). From the middle of the Ghost River formation and in the uppermost breccio-conglomerate. Devonian (Patterson & Storey, 1963).

2. From the North Saskatchewan River gap in the Brazeau range, Alberta. Perdrix formation. Devonian (Langston 1964).

3. A light grey, hard sandstone at S.O. Haken on the east side of the inner part of Goose Fiord, and also the fish horizon, middle part of sandstone series D, Skrap Valley, Ellesmere Island, Northwest Territories, Upper Devonian (Kiaer, 1915).

Material: National Museum of Canada, Ottawa, accession no. 324, and Palaeontological Museum, Oslo.

Sub-Class ARTHRODIRI

Order COCCOSTEIFORMES

Sub-order Dolichothoraci

Family Phlyctaenaspidae

Genus *Phlyctaenaspis* Traquair 1890

Phlyctaenaspis acadica (Whiteaves) (C)

1881f *Coccosteus acadicus* Whiteaves, p. 94, fig. 1 (c)
1883 *Coccosteus acadicus* Whiteaves: Ells, p. 9D (c)
1889a *Coccosteus acadicus* Whiteaves: Whiteaves, p. 93, pl. 9, figs. 2, 3, 4, pl. 10, fig. 1 (c)
1890 *Phlyctaenius acadicus* (Whiteaves) Traquair, p. 20, pl. 3
1890a *Phlyctaenius acadicus* (Whiteaves): Traquair, p. 60, pl. 3, figs. 1, 2
1890b *Phlyctaenaspis acadicus* (Whiteaves) Traquair, p. 144
1891 *Phlyctaenaspis acadica* (Whiteaves): Woodward, p. 295
1892a *Phlyctaenaspis acadica* (Whiteaves): Woodward, p. 5, pl. 1, figs. 7, 8
1892b *Phlyctaenaspis acadica* (Whiteaves): Woodward, p. 481, fig. 1
1893b *Phlyctaenaspis acadica* (Whiteaves): Traquair, p. 147, fig. 1
1895 *Phlyctaenaspis acadica* (Whiteaves): Jaekel, p. 162
1902 *Phlyctaenaspis acadica* (Whiteaves): Hay, p. 345
1905 *Phlyctaenaspis acadica* (Whiteaves): Lambe, pp. 16, 34, 42
1906 *Phlyctaenaspis acadica* (Whiteaves): Hussakof, p. 137
1907 *Phlyctaenaspis acadica* (Whiteaves): Whiteaves, p. 265, pl. 4, figs. 1–4 (c)
1907 *Phlyctaenaspis acadica* (Whiteaves): Eastman, p. 13
1908 *Phlyctaenaspis acadica* (Whiteaves): Eastman, pp. 188, 276
1912 *Phlyctaenaspis acadica* (Whiteaves): Lambe, p. 4
1916 *Phlyctaenaspis acadica* (Whiteaves): Chapman, pp. 121, 212, fig. 6
1925a *Phlyctaenaspis acadica* (Whiteaves): Stensiö, p. 165, figs. 20, 21
1929 *Phlyctaenaspis acadica* (Whiteaves): Hay, p. 652
1933 *Phlyctaenaspis acadica* (Whiteaves): Heintz, p. 137, pls. 1–3, figs. 1–6

1935 *Phlyctaeniaspis acadicus* (Whiteaves): Alcock, p. 81 (name only) (c)
1938 *Phlyctaenaspis acadica* (Whiteaves): Hussakof, p. 280
1950 *Phlyctaenaspis acadica* (Whiteaves): Denison, p. 566
1951 *Phlyctaenaspis acadica* (Whiteaves): Ørvig, p. 408, pl. 7, fig. 1
1957 *Phlyctaenaspis acadica* (Whiteaves): Gross, p. 20, pl. 6, figs. 5–7, text-fig. 9
1957 *Phlyctaenaspis acadica* (Whiteaves): Ørvig, p. 405, fig. 9A.
1958 *Phlyctaenaspis acadica* (Whiteaves): Denison, p. 507, fig. 105G.
1962 *Phlyctaenaspis acadica* (Whiteaves): Miles, p. 65
1964 *Phlyctaenaspis acadica* (Whiteaves): Lehman, p. 194, pl. 1D.

Locality: South bank of the Restigouche River, ½ mile west of Campbellton, New Brunswick. From argillaceous beds. Lower Devonian. (See also Alcock, 1935).

Type: National Museum of Canada, Ottawa, no. 2774, a cranial shield and dentigerous plates from the Restigouche River, near Campbellton.

Phlyctaenaspis sp.

1908 *Coccosteus* sp., Ells, p. 66 (c)

Locality: Restigouche County, New Brunswick, Lower Devonian.

1947 *Phlyctaenaspis* sp., Russell, p. 4 (c)

Locality: Sea cliff, a short distance to the east of D'Aiguillon Post Office, Cap des Rosiers Township, Gaspé County, Quebec. Lower Devonian?

Sub-order Brachythoraci

Family Coccosteidae

Genus *Coccosteus* Agassiz 1884

Coccosteus sp.

1910 *Coccosteus* sp., Ells, p. 66 (c)
1959 *Coccosteus* sp., Gussow, p. 17 (c)
1963 *Coccosteus* sp., Patterson & Storey, p. 292 (c)

Localities: 1. Red Earth Oilfield, Alberta. Devonian.

2. End Mountain, in the front range of the Rocky Mountains, Alberta. Ghost River formation. Middle Devonian.

3. Restigouche River, New Brunswick. Lower Devonian.

4. Northeast spur of End Mountain, Alberta (T.26, R.9, W. of 5th Meridian). In the uppermost breccio conglomerate from the middle of the Ghost River formation. Middle Devonian.

Coccosteomorph

1915 Great Coccosteomorph form, Kiaer, p. 38, pl. 2, figs. 3, 4 (c)

Locality: Fish horizon, Skrap Valley, Ellesmere Island, Northwest Territories. Oske Bay formation (sandstone series D, middle part). Lowermost, Upper Devonian.

Material: Palaeontological Museum, Oslo.

Genus *Dinichthys* Newberry 1868

Dinichthys canadensis Whiteaves (C)

1892 *Dinichthys canadensis* Whiteaves, p. 353, pl. 46, fig. 12 (c)
1892 *Dinichthys canadensis* Whiteaves: Tyrrell, pp. 163, 209 (c)
1902 *Dinichthys canadensis* Whiteaves: Hay, p. 346
1903 *Dinichthys canadensis* Whiteaves: Claypole, pp. 320, 322
1905 *Dinichthys canadensis* Whiteaves: Lambe, pp. 17, 34, 42
1906 *Dinichthys canadensis* Whiteaves: Hussakof, p. 137
1907 *Dinichthys canadensis* Whiteaves: Eastman, p. 15
1908 *Dinichthys canadensis* Whiteaves: Eastman, p. 279
1914b *Dinichthys canadensis* Whiteaves: Kindle, p. 255 (c)
1929 *Dinichthys canadensis* Whiteaves: Hay, p. 653
1944 *Dinichthys canadensis* Whiteaves: Okulitich, p. 65 (name only)

Locality: North end of Snake Island, Lake Winnipegosis, Manitoba. Cuboides zone (Upper subdivision of Middle Devonian). Middle Devonian.

Type: National Museum of Canada, Ottawa, no. 4123, from the Middle Devonian of Snake Island.

Dinichthys manitobensis Okulitich (C)

1944 *Dinichthys manitobensis* Okulitich, p. 65, pls. 1, 2 (c)

Locality: From a quarry of the Winnipeg Supply & Fuel Co., at Spearhill, 17 miles E from Lake Manitoba and about 5 miles NE of the town of Moosehorn, which lies on the Winnipeg-Gypsumville C.N.R. line. Approximately 100 miles from Winnipeg. From the Elm Point limestone. Middle Devonian (base of)

Type: National Museum of Canada, Ottawa, no. 8839, several plates, from the Middle Devonian of Spearhill.

Dinichthys sp.

1936 *Dinichthys* sp., Warren, p. 57 (c)
1937 *Dinichthys* sp., Warren, p. 456 (c)

Locality: 1 mile east of the cement plant at Exshaw, Alberta (83-C-6). From the highest bed of the Minnewanka limestone. Upper Devonian.

Material: University of Alberta, Geological Museum, Edmonton, Alberta, from the Upper Devonian of Exshaw.

1915 *Dinichthys* sp., Stauffer, pp. 184, 228 (c)
1943 *Dinichthys* sp., Caley, p. 47 (c)
1946 *Dinichthys* sp., Caley, p. 61 (c)

Locality: Kettle Point, a promontory which projects into Lake Huron in the northwestern part of Bosanquet Township, on the west side of Ipperwash Beach, Lambton County, Ontario. From the black shales of the Kettle Point formation. Upper Devonian.

Material: National Museum of Canada, Ottawa, from the Upper Devonian of Kettle Point.

Genus *Plourdosteus* Ørvig 1951

Plourdosteus canadensis (Woodward) (C)

1892b *Coccosteus canadensis* Woodward, p. 483, pl. 13, fig. 2 (c)
1893b *Coccosteus canadensis* Woodward: Traquair, p. 265
1898 *Coccosteus canadensis* Woodward: Eastman, p. 750
1902 *Coccosteus canadensis* Woodward: Hay, p. 344
1903 *Coccosteus canadensis* Woodward: Traquair, p. 733
1905 *Coccosteus canadensis* Woodward: Lambe, pp. 17, 34, 42 (c)
1907 *Coccosteus canadensis* Woodward: Whiteaves, p. 251 (c)
1907 *Coccosteus canadensis* Woodward: Eastman, pp. 17, 115
1908 *Coccosteus canadensis* Woodward: Eastman, pp. 186, 280
1912 *Coccosteus canadensis* Woodward: Hussakof, p. 127, fig. 1, pl. 1
1913 *Coccosteus canadensis* Woodward: Clarke, p. 113 (c)
1918 *Coccosteus canadensis* Woodward: Hussakof & Bryant, p. 26, pl. 5, figs. 1–3
1929 *Coccosteus canadensis* Woodward: Hay, p. 650
1935 *Coccosteus canadensis* Woodward: Alcock, p. 88 (c)
1938 *Coccosteus canadensis* Woodward: Heintz, p. 10, text-figs. 3, 4, 5
1942 *Coccosteus canadensis* Woodward: Stensiö, text-fig. 12
1948 *Coccosteus canadensis* Woodward: Stensiö, p. 207, text-fig. 74
1951 *Plourdosteus* (*Coccosteus*) *canadensis* (Woodward) Ørvig, pp. 322, 326, 394, figs. 2E, 15–17
1954 *Coccosteus canadensis* Woodward: Obrucheva, p. 1055
1957 *Plourdosteus canadensis* (Woodward): Ørvig, p. 371, fig. 1H.
1957a *Plourdosteus canadensis* (Woodward): Ørvig, p. 314, fig. 8B.
1959 *Plourdosteus canadensis* (Woodward): Obrucheva, p. 79
1963a *Plourdosteus canadensis* (Woodward): Denison, p. 148, fig. 9
1963 *Plourdosteus canadensis* (Woodward): Miles & Westoll, p. 183
1965 *Plourdosteus canadensis* (Woodward): Miles, p. 441, fig. 10A.

Locality: Maguasha West, on the southwest side of the Gaspé Peninsula, on the shores of Escuminac Bay, Quebec. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Type: British Museum (Natural History), no. P 6755 from the Upper Devonian of Maguasha West.

Family Holonemidae

Genus *Aspidichthys* Newberry 1873

Aspidichthys notabilis Whiteaves (C)

1889b *Macropetalichthys sullivanti* Newberry: Whiteaves, p. 119 (c)
1892 *Aspidichthys* (?) *notabilis* Whiteaves, p. 354, pl. 47, figs. 1, 1a (c)
1892 *Aspidichthys notabilis* Whiteaves: Tyrrell, p. 209 (c)
1898 *Aspidichthys notabilis* Whiteaves: Whiteaves, pp. 411, 418, pl. 50, figs. 1, 2
1902 *Aspidichthys* (?) *notabilis* Whiteaves: Hay, p. 354
1905 *Aspidichthys* (?) *notabilis* Whiteaves: Lambe, pp. 17, 34, 42
1907 *Aspidichthys* (?) *notabilis* Whiteaves: Eastman, p. 16
1908 *Aspidichthys* (?) *notabilis* Whiteaves: Eastman, pp. 207, 279

1915 *Aspidichthys notabilis* (?) Whiteaves: Stauffer, pp. 176, 237 (c)
1918 *Aspidichthys notabilis* Whiteaves: Hussakof & Bryant, pp. 13, 17, 91, pls. 25, 26
1929 *Aspidichthys notabilis* Whiteaves: Bryant, p. 37, figs. 18, 19
1929 *Aspidichthys* (?) *notabilis* Whiteaves: Hay, p. 651
1937 *Aspidichthys notabilis* Whiteaves: Wells, p. 612
1944 *Aspidichthys* (?) *notabilis* Whiteaves: Okulitich, p. 65 (name only)
1956 *Aspidichthys notabilis* Whiteaves: Sinclair & Walker, p. 135
1965a *Aspidichthys* (?) *notabilis* Whiteaves: Miles, p. 548

Localities: 1. South Manitou Island, Lake Winnipegosis, Manitoba, Cuboides zone, Middle Devonian.

2. Thedford and Sable River, Barlett's Mills, near Arkona, Lambton County, Ontario. Corniferous limestone, Middle Devonian.

3. Mattagami and branch of Moose River, Ontario. Corniferous limestone. Middle Devonian.

4. Hamilton beds of Ontario. M. Devonian.

Type: National Museum of Canada, Ottawa, no. 4162, a ventral shield from South Manitou Island.

Remarks: These remains do not belong to *Aspidichthys* (see Miles 1965a), but should be placed in a n. gen.

Aspidichthys ? sp.

1915 *Aspidichthys* (?) sp., Stauffer, p. 172 (c)

Locality: Two miles north of Arkona, no. 4 hill, lot 4, concession 1, a small tributary to Ausable River, Lambton County, Ontario. Middle Devonian.

Material: National Museum of Canada, Ottawa.

Remarks: Other material similar to that of Stauffer (1915) is in the Royal Ontario Museum and comes from Moose River, Murray Island. Middle Devonian.

Family Selenosteidae

Genus *Stenosteus* Dean 1901

Stenosteus sp.

1915 *Stenosteus* sp., Stauffer, pp. 184, 228 (c)
1943 *Stenosteus* sp., Caley, p. 61 (c)
1946 *Stenosteus* sp., Caley, p. 47 (c)

Locality: Kettle Point, a promontory which projects into Lake Huron, in the northwestern part of Bosanquet Township, west side of Ipperwash Beach, Lambton County, Ontario, Kettle Point formation. Upper Devonian.

Material: National Museum of Canada, Ottawa, from Kettle Point.

Sub-order Petalichthyidi

Family Macropetalichthyidae

Genus *Macropetalichthys* Norwood & Owen 1846

Macropetalichthys rapheidolabis Norwood & Owen

1846 *Macropetalichthys rapheidolabis* Norwood & Owen, p. 371, figs. 1, 2
1846 *Macropetalichthys rapheidolabis* Norwood & Owen, folio pub. in Madison
1851 "Buckler of Ganoid Fish" Agassiz, p. 179
1853 *Macropetalichthys* sp. Newberry, p. 12
1857 *Agassichthys manni* Newberry, p. 122 and woodcut
1857 *Agassichthys sullivanti* Newberry, p. 124
1862 *Macropetalichthys manni* (Newberry) Newberry, p. 75, woodcut 1
1862 *Macropetalichthys rapheidolabis* Norwood & Owen: Newberry, p. 75, woodcut 1
1862 *Macropetalichthys sullivanti* (Newberry) Newberry, p. 75
1870 *Macropetalichthys sullivanti* (Newberry): Newberry, p. 17
1873 *Macropetalichthys sullivanti* (Newberry): Newberry, p. 294, pls. 24, 25, fig. 1, 1a
1874 *Macropetalichthys sullivanti* (Newberry): Newberry, p. 192
1877 *Macropetalichthys sullivanti* (Newberry): Whiteaves, p. 319 (c)
1877 *Macropetalichthys sullivanti* (Newberry): Bell, p. 319 (c)
1878 *Macropetalichthys sullivanti* (Newberry): Orton, pp. 625, 628
1889 *Macropetalichthys sullivanti* (Newberry): Newberry, p. 44, pl. 38, figs. 1, 2
1889b *Macropetalichthys sullivanti* (Newberry): Whiteaves, p. 119 (c)
1890 *Macropetalichthys sullivanti* (Newberry): Cope, p. 846
1891a *Macropetalichthys rapheidolabis* Norwood & Owen: Cope, p. 449, pl. 29, fig. 4
1891a *Macropetalichthys sullivanti* (Newberry): Cope, p. 455, pl. 30, fig. 5
1897 *Macropetalichthys sullivanti* (Newberry): Eastman, pp. 493, 499, pl. 12
1897 *Macropetalichthys rapheidolabis* Norwood & Owen: Eastman, pp. 493, 499, pl. 12
1899 *Macropetalichthys sullivanti* (Newberry): Dames, p. 556, fig. 1
1901 *Macropetalichthys* sp., Dean, p. 119, fig. 12
1902 *Macropetalichthys rapheidolabis* Norwood & Owen: Hay, p. 349
1902 *Macropetalichthys sullivanti* (Newberry): Hay, p. 349
1903 *Macropetalichthys* sp. Jaekel, p. 342
1903 *Macropetalichthys rapheidolabis* Norwood & Owen: Claypole, pp. 312, 319
1903 *Macropetalichthys sullivanti* (Newberry): Claypole, pp. 312, 319
1905 ? *Macropetalichthys sullivanti* (Newberry): Lambe, pp. 16, 34, 42 (c)
1907 *Macropetalichthys rapheidolabis* Norwood & Owen: Eastman, pp. 14, 103, 231, pl. 9, fig. 5, pl. 11, text-figs. 19–21
1907 *Macropetalichthys sullivanti* (Newberry): Hennig, p. 587
1908 *Macropetalichthys rapheidolabis* Norwood & Owen: Hussakof, p. 16
1908 *Macropetalichthys rapheidolabis* Norwood & Owen: Eastman, pp. 168, 278, fig. 24

1909 *Macropetalichthys rapheidolabis* Norwood & Owen: Stauffer, p. 169
1915 *Macropetalichthys rapheidolabis* Norwood & Owen: Stauffer, pp. 86, 152, 205, 223, 248
1915 *Macropetalichthys rapheidolabis* Norwood & Owen: Kiaer, pp. 11, 13, fig. 2
1918 *Macropetalichthys rapheidolabis* Norwood & Owen: Hussakof & Bryant, pp. 10, 25
1925a *Macropetalichthys rapheidolabis* Norwood & Owen: Stensiö, p. 89, pls. 19–28, 30, figs. 1–13, 15
1926 *Macropetalichthys rapheidolabis* Norwood & Owen: Jaekel, pp. 161–184, figs. 1–3
1929 *Macropetalichthys rapheidolabis* Norwood & Owen: Hay, p. 644
1930 *Macropetalichthys rapheidolabis* Norwood & Owen: Stetson, p. 29, pls. 6, fig. 4, pl. 7
1951 *Macropetalichthys rapheidolabis* Norwood & Owen: Ørvig, p. 409
1957a *Macropetalichthys rapheidolabis* Norwood & Owen: Ørvig, p. 294, figs. 5A, 7B

Localities: 1. Cargill, on the Teeswater River, between Greenock and Brant, Bruce County, Ontario. Basal Onondagan limestone. Middle Devonian.

2. Amherstburg, on the Detroit River, 3 miles north of Lake Erie, from the quarry of the Amherstburg Stone Company, Anderdon Township, 1¼ miles northeast of Amherstburg, Essex County, Ontario. Onondagan. Middle Devonian.

3. Just south of Springvale (lot 6, concession 14), Walpole Township, Haldimand County, Ontario. Lower Onondagan. Middle Devonian.

4. From the Sable River, near Bartlett's Mills, Ontario. Onondagan. Middle Devonian.

5. Also recorded from Hagersville, Ontario, Mattagami River (which is a branch of the Moose River), Ontario and from Port Colborne, Ontario. All Onondagan. Middle Devonian.

Type: This was lost in Newberry's time (1889 : 27) but was from the Corniferous limestone of Ohio, Lower Devonian.

Genus *Ellopetalichthys* Ørvig 1957

Elloptetalichthys scheii (Kiaer) (C)

1915 *Macropetalichthys scheii* Kiaer, p. 9, pl. 1, figs. 1–6 (c)
1929 *Macropetalichthys scheii* Kiaer: Hay, p. 645
1932 *Macropetalichthys scheii* Kiaer: Save-Soderbergh, p. 33
1937 *Macropetalichthys scheii* Kiaer: Heintz, p. 6
1941 *Macropetalichthys scheii* Kiaer: Woodward, p. 95
1950 *Macropetalichthys scheii* Kiaer: Gross, p. 46
1951 *Macropetalichthys scheii* Kiaer: Ørvig, p. 409
1957a *Ellopetalichthys scheii* (Kiaer) Ørvig, pp. 285, 299, figs. 5F, 7A, pl. 1

Locality: Goose Fiord, Ellesmere Island, Northwest Territories. Zone Dh, Marine facies. Upper part of Upper Devonian (Chemung).

Type: Palaeontological Museum, Oslo, no. A 13047 and counterparts nos. A 13048–9 from Goose Fiord.

Coccosteomorph n. gen. et sp. (C)

Locality: From an outcrop at the north end of the bridge across Aux Sable River at Hungry Hollow, 2 miles east and three-quarters of a mile north of Arkona, Ontario. From the basal layer of the Wider formation immediately above the coral bed of the Hungry Hollow formation. Middle Devonian.

Material: A right posterior ventro-lateral plate of estimated length 30 cms. In the Museum of Paleontology, University of Michigan, Ann Arbor, no. 27740.

Order PTYCTODONTIFORMES

Family Ptyctodontidae

Genus *Ptyctodus* Pander 1858

Ptyctodus calceolus (Newberry & Worthen)

1866 *Rhinodus calceolus* Newberry & Worthen, p. 106, pl. 10, fig. 10
1870 *Ptyctodus calceolus* (Newberry & Worthen) Newberry & Worthen, p. 374
1875 *Ptyctodus calceolus* (Newberry & Worthen): Newberry, p. 59, pl. 59, fig. 13
1891 *Ptyctodus calceolus* Newberry: Woodward, p. 39
1892 *Ptyctodus calceolus* (Newberry & Worthen): Whiteaves, p. 353 (c)
1892 *Ptyctodus calceolus* (Newberry & Worthen): Tyrell, p. 209 (c)
1897 *Ptyctodus calceolus* (Newberry & Worthen): Calvin, p. 18
1897 *Ptyctodus calceolus* (Newberry & Worthen): Eastman, p. 115, fig. 10a
1898 *Ptyctodus calceolus* (Newberry & Worthen): Whiteaves, p. 410 (c)
1898 *Ptyctodus calceolus* (Newberry & Worthen): Eastman, p. 476, figs. 1–17
1898 *Ptyctodus calceolus* (Newberry & Worthen): Shepard, p. 79
1899 *Ptyctodus calceolus* (Newberry & Worthen): Udden, pp. 282, 292, 294, 298, 302
1899 *Ptyctodus calceolus* (Newberry & Worthen): Weller, p. 484
1902 *Ptyctodus calceolus* (Newberry & Worthen): Hay, p. 322
1904a *Ptyctodus calceolus* (Newberry & Worthen): Eastman, p. 298
1905 *Ptyctodus calceolus* (Newberry & Worthen): Lambe, pp. 34, 42
1906 *Ptyctodus* sp., Dean, p. 137, fig. 116
1906 *Ptyctodus calceolus* (Newberry & Worthen): Norton, p. 356
1907 *Ptyctodus calceolus* (Newberry & Worthen): Eastman, pp. 15, 16, 17, 20, 71
1908 *Ptyctodus calceolus* (Newberry & Worthen): Eastman, pp. 48, 128, 133, 277
1911 *Ptyctodus calceolus* (Newberry & Worthen): Cleland, p. 150, pl. 48, figs. 1–17
1914 *Ptyctodus calceolus* (Newberry & Worthen): Branson, p. 64, pl. 3, figs. 3, 4

1915 *Ptyctodus calceolus* (Newberry & Worthen): Stauffer, p. 237 (c)
1918 *Ptyctodus calceolus* (Newberry & Worthen): Hussakof & Bryant, pp. 15, 108, pls. 34, 36, figs. 1, 2, 10
1919 *Ptyctodus calceolus* (Newberry & Worthen): Branson, pl. 4, fig. 16
1922 *Ptyctodus calceolus* (Newberry & Worthen): Branson, pp. 6, 22, 44, 45, 126, pl. 31, figs. 1, 2
1929 *Ptyctodus calceolus* (Newberry & Worthen): Hay, p. 647
1957a *Ptyctodus calceolus* (Newberry & Worthen): Ørvig, p. 327, fig. 11

Localities: 1. A small island at the southern extremity of Lake Winnipegosis, Manitoba.

2. The western shore of Dawson Bay and also Point Wilkins, Manitoba.

3. Not uncommon in the Hamilton formation of western Ontario, i.e. Thedford, the banks of the Sable River at Bartlett's Mills, etc. Middle Devonian.

Type: Two syntypes in the U.S. National Museum, Washington, nos. 13516 and 13517, from the Hamilton group, Illinois.

Genus *Rhynchodus* Newberry 1873

Rhynchodus sp.

1892 *Rhynchodus* sp., Tyrrell, pp. 209, 129 (c)
1892 *Rhynchodus* sp., Whiteaves, p. 353 (c)
1905 *Rhynchodus* sp., Lambe, pp. 34, 42 (c)
1908 *Rhynchodus* sp., Eastman, pp. 281, 287

Locality: North end of Manitoba Island, Manitoba. Cuboides Zone. Upper Division of the Middle Devonian.

Material: National Museum of Canada, Ottawa.

Arthrodiri Incertae Sedis

Genus *Machaeracanthus* Newberry 1857

Machaeracanthus peracutus Newberry

1857 *Machaeracanthus peracutus* Newberry, p. 6
1862 *Machaeracanthus peracutus* Newberry: Newberry, p. 74 and woodcut
1873 *Machaeracanthus peracutus* Newberry: Newberry, p. 303, pl. 29, fig. 6
1874 *Machaeracanthus peracutus* Newberry: Newberry, p. 192
1877 *Machairacanthus peracutus* Newberry: Whiteaves, p. 319 (c)
1878 *Machaeracanthus peracutus* Newberry: Orton, p. 626
1889 *Machaeracanthus peracutus* Newberry: Newberry, pp. 38, 40, pl. 29, fig. 6
1891 *Machaeracanthus peracutus* Newberry: Woodward, p. 124
1902 *Machaeracanthus peracutus* Newberry: Hay, p. 332
1903 *Machaeracanthus peracutus* Newberry: Claypole, p. 318
1904 *Machaeracanthus peracutus* Newberry: Clarke & Luther, p. 42
1905 *Machaeracanthus peracutus* Newberry: Lambe, pp. 16, 34, 42 (c)
1907 *Machaeracanthus peracutus* Newberry: Eastman, pp. 14, 84

1908 *Machaeracanthus peracutus* Newberry: Eastman, pp. 114, 277
1908 *Machaeracanthus peracutus* Newberry: Hussakof, p. 49
1909 *Machaeracanthus peracutus* Newberry: Stauffer, p. 169
1910 *Machaeracanthus peracutus* Newberry: Smith, p. 658
1918 *Machaeracanthus peracutus* Newberry: Hussakof & Bryant, p. 17, 167, pl. 53, fig. 3
1924 *Machaeracanthus peracutus* Newberry: Rogers, p. 546
1929 *Machaeracanthus peracutus* Newberry: Hay, p. 625

Locality: Cayuga, N. Ontario. Onondagan. Middle Devonian.

Type: Series of syntypes of which AMNH 272 has been chosen as the lectotype, in the American Museum of Natural History, New York, from the Corniferous Limestone of Ohio.

Machaeracanthus sulcatus Newberry

1843 "Ichthyodorulite", Hall, p. 174, fig. 69
1857 *Machaeracanthus sulcatus* Newberry, p. 6
1862 *Machaeracanthus sulcatus* Newberry: Newberry, p. 74
1863 *Machaeracanthus sulcatus* Newberry: Billings, p. 395
1870a *Machaeracanthus sulcatus* Newberry: Lankester, p. 398, fig. 3
1873 *Machaeracanthus sulcatus* Newberry: Newberry, p. 305
1874 *Machaeracanthus sulcatus* Newberry: Newberry, p. 192
1877 *Machairaeanthus sulcatus*? Newberry: Whiteaves, p. 319
1878 *Machaeracanthus sulcatus* Newberry: Orton, p. 626
1886 *Machaeracanthus sulcatus* Newberry: Lennox, p. 120
1888 *Machaeracanthus sulcatus* Newberry: Chapman, p. 291 (c)
1889 *Machaeracanthus sulcatus* Newberry: Newberry, p. 40, pl. 29, figs. 5, 5a
1891 *Machaeracanthus sulcatus* Newberry: Woodward, p. 123
1902 *Machaeracanthus sulcatus* Newberry: Hay, p. 332
1903 *Machaeracanthus sulcatus* Newberry: Clarke & Ruedmann, p. 767
1903 *Machaeracanthus sulcatus* Newberry: Claypole, p. 318
1903 *Machaeracanthus sulcatus* Newberry: Van Ingen & Clarke, pp. 1204, 1208
1904 *Machaeracanthus sulcatus* Newberry: Clarke & Luther, p. 42
1905 *Machaeracanthus sulcatus* Newberry: Lambe, pp. 34, 42 (c)
1907 *Machaeracanthus sulcatus* Newberry: Eastman, pp. 13, 14, 84, 191, 231, pl. 3, fig. 4
1908 *Machaeracanthus sulcatus* Newberry: Eastman, pp. 114, 276, 278
1909 *Machaeracanthus sulcatus* Newberry: Stauffer, p. 169
1910 *Machaeracanthus sulcatus* Newberry: Smith, p. 658
1929 *Machaeracanthus sulcatus* Newberry: Hay, p. 625

Localities: 1. Gaspé region, Quebec. Lower Devonian.

2. Walpole Township, Ontario. Onondagan. Middle Devonian.

3. From the Corniferous and Hamilton formations of southwest Ontario. Middle Devonian.

Type: Probably in the Geology Dept., Wesleyan University, Delaware, Ohio, from the Corniferous Limestone of Ohio.

Machaeracanthus sp.

1898 *Machaeracanthus* sp., Bailey, p. 102 (c)
1935 *Machaeracanthus* sp., Romer & Grove, p. 814

Locality: Nictaux Falls region, Nova Scotia. From a 5′ band of ore (partly magnetite, partly haematite) at Wheeler's Mine, near Torbrook. Oriskany. Lower Devonian.

Material: National Museum of Canada, Ottawa.

Class Holocephali

Order EDESTIFORMES

Family Helicoprionidae

Genus *Lissoprion* Hay 1907

Lissoprion sp.

1917 *Lissoprion* sp., Lambe, p. 294 (c)
1929 *Lissoprion* sp. ? Lambe, Hay, p. 573

Locality: Sundance Canyon, Banff, Alberta. Rocky Mountain quartzite (Phosphate horizon). Upper Carboniferous.

Material: National Museum of Canada, Ottawa.

Genus *Scoliorhiza* Raymond 1925

Scoliorhiza kellyi Raymond (C)

1925 *Scoliorhiza kellyi* Raymond, p. 555, fig. 2 (c)
1929 *Scoliorhiza kellyi* Raymond: Hay, p. 571

Locality: Upper Rocky River, Alberta (82-0-4). From the lower part of the Upper Banff (Rundle) limestone, a short distance above the contact with the Banff shale. Lower Carboniferous.

Type: National Museum of Canada, Ottawa, from the Upper Rocky River, six associated teeth.

Remarks: Hay, 1930, p. 571 erroneously attributes *Scoliorhiza whitei* (St. John & Worthen) to the above locality and to Alberta. *S. whitei* to my knowledge has so far not been recorded from Canada.

Order HETERODONTIFORMES

Family Helodontidae

Genus *Helodus* Agassiz 1838

Helodus subtuberatus Lambe (C)

1912a *Helodus* sp., Lambe, p. 207
1912a *Helodus subtuberatus* Lambe, p. 347 (c)
1913 *Helodus subtuberatus* Lambe: Lambe, p. 20, pl. 2, figs. 1–4 (c)
1929 *Helodus subtuberatus* Lambe: Hay, p. 557
1945 *Helodus subtuberatus* Lambe: Sternberg, p. 539 (c)

Localities: 1. Roche Miette, near Jasper Lake, 30 miles northeast of the Yellowhead Pass, Alberta (83-F-4). Upper Devonian.

2. North side of the Athabaska River, at Brule Lake, on the eastern slope of Bullrush Mountain, Alberta (83-F-4). Upper Devonian.

Type: National Museum of Canada, no. 7764, a tooth from Roche Miette.

Order CHIMAERIFORMES

Family Cochliodontidae

Genus *Deltodus* Morris & Roberts 1862

Deltodus sp.

Locality: The Gap, Livingstone Range, north of Lundbreck, Alberta.

Material: British Museum (Natural History), an isolated tooth.

Genus *Sandalodus* Newberry & Worthen 1866

Sandalodus liardensis Sternberg (C)

1945 *Sandalodus liardensis* Sternberg, p. 539, pl. 70, fig. 6 (c)
1945 *Sandalodus* sp. cf. *crassus* Haye, p. 12 (c)

Locality: Liard Range, 18 miles north of Fort Liard, Northwest Territories. Upper Limestone member, Mississippian.

Type: National Museum of Canada, Ottawa, no 8847, a tooth from the Liard Range.

Family Chimaeridae

Genus *Chimaerotheca* Brown 1946

Chimaerotheca stelcki Warren (C)

1948 *Chimaerotheca stelcki* Warren, p. 630, fig. 1 (c)

Locality: From 1023′ above the base of the Nikanassin formation on the Sulphur and Sheep Rivers (tributaries of the Smoky River) in the foothills of the Peace River District, Alberta. Upper Jurassic.

Type: University of Alberta, Geological Museum, Edmonton, no. Jr 525, from the Upper Jurassic of Sulphur River.

Remarks: These fossil chimaeroid eggs are very common and can be used as index fossils.

Chimaeroid indet.

Locality: Steveville, Alberta. Upper Cretaceous.

Material: British Museum (Natural History), vomerine teeth.

Class Elasmobranchii

Sub-Class XENACANTHII

Order XENACANTHIFORMES

Family Xenacanthidae

Genus *Xenacanthus* Beyrich 1848

Xenacanthus acinaces (Dawson) (C)

1860 *Diplodus acinaces* Dawson, p. 46, fig. 43 (c)
1868 *Diplodus acinaces* Dawson: Dawson, p. 211, fig. 58 (c)
1889 *Diplodus acinaces* Dawson: Woodward, p. 13

1905 *Dittodus acinaces* (Dawson) Lambe, pp. 19, 35, 40
1929 *Dittodus acinaces* (Dawson): Hay, p. 539

Locality: Pictou, Nova Scotia. Coal Measures.

Type: Dawson Collection, Redpath Museum, McGill University, Montreal, from Pictou, Nova Scotia.

Xenacanthus penetrans (Dawson) (C)

1860 *Diplodus penetrans* Dawson, p. 50, fig. 42 (c)
1868 *Diplodus penetrans* Dawson: Dawson, p. 211, fig. 57 (c)
1889 *Diplodus penetrans* Dawson: Woodward, p. 14
1903a *Diplodus penetrans* Dawson: Whiteaves, p. 29M (c)
1905 *Dittodus penetrans* (Dawson) Lambe, pp. 19, 35, 40
1929 *Dittodus penetrans* (Dawson): Hay, p. 539

Locality: Pictou, Nova Scotia. Coal Measures.

Type: Dawson Collection, Redpath Museum, McGill University, Montreal, from Pictou, Nova Scotia.

XENACANTHUS sp.

1870 *Diplodus* scales, Logan, p. 31 (c)
1870 *Diplodus* teeth, spines and scales, Hartley, p. 78 (c)
1959 *Diplodus* sp., Copeland, faunal list.

Locality: Pictou, Nova Scotia. Facies B, Cumberland group (Early Westphalian). Coal Measures (also recorded from New Glasgow, Nova Scotia).

Material: National Museum of Canada, Ottawa.

Sub-Class EUSELACHII

Order HYBODONTIFORMES

Family Ctenacanthidae

Genus *Ctenacanthus* Agassiz 1836

Ctenacanthus sp.

1868 *Ctenacanthus* sp., Dawson, p. 255, figs. 77g–h (c)
1929 *Ctenacanthus* sp., Bell, p. 34 (c)

Locality: Horton-Windsor District, New Brunswick. Horton Bluff formation. Coal Measures.

Material: Redpath Museum, McGill University, Montreal (Dawson Collection).

Family Hybodontidae

Genus *Hybodus* Agassiz 1837

Hybodus sp.

Locality: Scree slopes south of Wapiti Lake, Ganoid Range, British Columbia. Spray River formation. Lower Triassic (Landon *et al.*, 1949; Forbes & McGugan, 1959)

Material: American Museum of Natural History, New York, and the National Museum of Canada, Ottawa.

Family Ptychodontidae

Genus *Ptychodus* Agassiz 1839

Ptychodus parvulus Whiteaves (C)

1876 *Ptychodus* sp., Spencer, p. 65 (c)
1889b *Ptychodus parvulus* Whiteaves, p. 191, pl. 26, figs. 5, 5a–b (c)
1892 *Ptychodus parvulus* Whiteaves: Tyrrell, p. 211E (c)
1892 *Ptychodus parvalus* Whiteaves: Rüst, p. 102 (c)
1902 *Ptychodus parvulus* Whiteaves: Hay, p. 318
1905 *Ptychodus parvulus* Whiteaves: Lambe, pp. 21, 36, 41
1929 *Ptychodus parvulus* Whiteaves: Hay, p. 605

Locality: Swan River, below Thunder Hill in the Duck and Riding Mountain district, Manitoba. Niobrara group. Upper Cretaceous.

Type: National Museum of Canada, Ottawa, no. 5071 a tooth from the Swan River.

Ptychodus sp.

1893 *Ptychodus* sp., McConnell, p. 48 (c)

Locality: Peace River, 20 miles above the mouth of the Battle River, Athabasca district, Alberta. Peace River sandstone. Cretaceous.

Material: National Museum of Canada, Ottawa, from Peace River.

Order HETERODONTIFORMES

Family Heterodontidae

Genus *Palaeospinax* Egerton 1872

Palaeospinax ejuncidus Lambe (C)

1918 *Palaeospinax ejuncidus* Lambe, p. 27, fig. 1 (c)
1926 *Palaeospinax ejuncidus* Lambe: Sternberg, p. 104 (name only)
1929 *Palaeospinax ejuncidus* Lambe: Hay, p. 570
1930 *Palaeospinax ejuncidus* Lambe: Sternberg (in Williams & Dyer), p. 49 (c)
1932 *Palaeospinax ejuncidus* Lambe: Russell, p. 128 (c)
1947 *Palaeospinax ejuncidus* Lambe: Sternberg, p. 4
1949 *Palaeospinax ejuncidus* Lambe: Sternberg, p. 33 (name only)

Locality: 3 miles north of Tolman on the east side of the Red Deer River, 350′ above water mark, Alberta. Upper Edmonton member. Upper Cretaceous.

Type: National Museum of Canada, Ottawa, no. 2389, from Tolman, Alberta, posterior two-thirds, including tail.

Remarks: This specimen from the freshwater Upper Cretaceous cannot possibly belong to the genus *Palaeospinax*. Since the anal fin is so far back it is in all probability a Hybodont, but a hybodont which has by this late stage acquired vertebrae. It is probably very close to *Lonchidion selachos* Estes, 1964, p. 7.

Order GALEIFORMES

Sub-order Isuroidii
Family Isuridae

Genus *Lamna* Cuvier 1817

Lamna appendiculata (Agassiz)

1822 *Squalus mustelus*? Mantell, pl. 32, figs. 2–6, 9
1838 *Otodus appendiculatus* Agassiz, *3*, p. 270, pl. 32, figs. 1–25
1844 *Lamna appendiculata* (Agassiz) Lyell, p. 303
1889 *Lamna appendiculata* (Agassiz): Woodward, p. 393
1903 *Lamna appendiculata* (Agassiz): Whiteaves, pp. 315, 407 (c)
1905 *Lamna appendiculata* (Agassiz): Lambe, pp. 25, 37, 41 (c)

Localities: 1. Brennan Creek, near Wellington, Vancouver Island, British Columbia. Upper Cretaceous.

2. Patricia, Alberta. Basal Bearpaw. Upper Cretaceous.

Types: British Museum (Natural History). Agassiz 1838 cites Mantell 1822 (Fossils of the South Downs, pl. 32, figs. 2, 3, 5, 6, 9), thus all those specimens figured by Mantell (figs. 2, 3, 5, 6, 9) are syntypes. The Mantell collection is now in the B.M.N.H. but so far only one of these syntypes has been identified, no. 4518, a tooth from the chalk of Sussex (fig. 6 of Mantell).

Remarks: The wealth of literature on this species is such that it is impossible to cover it; thus only the earliest reference and a few of the Canadian ones are given.

Lamna manitobensis Whiteaves (C)

1889b *Lamna manitobensis* Whiteaves, p. 192, pl. 26, figs. 6, 6a, 6b (c)
1892 *Lamna manitobensis* Whiteaves: Rüst, p. 102 (c)
1892 *Lamna manitobensis* Whiteaves: Tyrrell, pp. 211E, 113E (c)
1902 *Lamna manitobensis* Whiteaves: Hay, p. 303
1905 *Lamna manitobensis* Whiteaves: Lambe, pp. 36, 41
1909 *Lamna manitobensis* Whiteaves: Dowling, p. 25 (c)
1929 *Lamna manitobensis* Whiteaves: Hay, p. 581

Localities: 1. Rolling River, 2 miles above Heart Hill in the Duck and Riding Mountain district, Manitoba. Niobrara group. Late Cretaceous.

2. Edwards Creek and from 1,115′ down a deep well at Deloraine, Southern Manitoba, Niobrara group. Late Cretaceous.

Type: National Museum of Canada, Ottawa, syntypes no. 5072, two teeth, from locality (1).

Lamna sp.

1926 *Lamna* sp., Sternberg, p. 104 (name only)
1930 *Lamna* sp., Sternberg (in Williams & Dyer), p. 49 (c)
1932 *Lamna* sp., Russell, p. 128 (c)

Locality: 1. Red Deer River, Alberta. From the Edmonton beds (Lower Edmonton member) and from the Oldman formation. Upper Cretaceous.

Material: Some in the National Museum of Canada, Ottawa.

Genus *Isurus* Rafinesque 1810

Isurus sp. ?

Locality: Etzikom Coulée, Foremost, Alberta. Foremost Beds. Upper Cretaceous (Campanian).

Material: Royal Ontario Museum, Toronto (labelled *Oxyrhina* sp.?)

Order RAJIFORMES

Family Dasyatidae

Genus *Myledaphus* Cope 1876

Myledaphus bipartitus Cope

1876 *Myledaphus bipartitus* Cope, p. 260
1901 *Myledaphus bipartitus* Cope: Priem, p. 500
1902 *Myledaphus bipartitus* Cope: Hay, p. 326
1902 *Myledaphus bipartitus* Cope: Osborne (name only) (c)
1902 *Myledaphus bipartitus* Cope: Lambe, p. 28, pl. 19, figs. 1, 2 (c)
1902 *Myledaphus bipartitus* Cope: Williston, p. 953
1903 *Myledaphus bipartitus* Cope: Sternberg, p. 357
1903a *Myledaphus bipartitus* Cope: Sternberg, p. 871
1903 *Myledaphus bipartitus* Cope: Hatcher, p. 372
1905 *Myledaphus bipartitus* Cope: Stanton & Hatcher, p. 68
1905 *Myledaphus bipartitus* Cope: Lambe, pp. 21, 36, 41
1905 *Myledaphus bipartitus* Cope: Hatcher, p. 68
1907 *Myledaphus bipartitus* Cope: Lambe, p. 179 (c)
1908 *Myledaphus bipartitus* Cope: Cockerell, p. 162
1908 *Myledaphus bipartitus* Cope: Hussakof, p. 32, fig. 7
1909 *Myledaphus bipartitus* Cope: Sternberg, p. 78, fig. 13
1910 *Myledaphus bipartitus* Cope: Hay, p. 313
1910a *Myledaphus bipartitus* Cope: Hay, p. 296
1912 *Myledaphus bipartitus* Cope: Peale, pp. 746, 754
1914 *Myledaphus bipartitus* Cope: Sternberg, p. 134
1914a *Myledaphus bipartitus* Cope: Lambe, pp. 398, 401
1914 *Myledaphus bipartitus* Cope: Brown, p. 378
1915 *Myledaphus bipartitus* Cope: Bowen, pp. 118, 148, 149
1915 *Myledaphus bipartitus* Cope: Lambe, p. 120
1915 *Myledaphus bipartitus* Cope: Sternberg, p. 132 (c)
1916 *Myledaphus bipartitus* Cope: Matthew, p. 485
1916 *Myledaphus bipartitus* Cope: Gilmore, p. 302, pl. 77, fig. 4 (doubtfully this sp.)
1924 *Myladephus bipartitus* Cope: Sternberg, p. 68 (c)
1924 *Myledaphus bipartitus* Cope: Gilmore, p. 27
1926 *Myledaphus bipartitus* Cope: Sternberg, pp. 103, 104
1927 *Myledaphus bipartitus* Cope: Jordan, p. 145 (c)
1929 *Myledaphus bipartitus* Cope: Hay, p. 616
1930 *Myledaphus bipartitus* Cope: Sternberg (in Williams & Dyer), pp. 33, 49
1935 *Myledaphus bipartitus* Cope: Fraser *et al.*, p. 42 (c)
1935 *Myledaphus bipartitus* Cope: Russell, p. 126 (c)
1946 *Myledaphus bipartitus* Cope: Furnival, p. 104 (c)
1964 *Myledaphus bipartitus* Cope: Estes, p. 15, text-figs. 7, 8, pl. 1

Localities: 1. Red Deer River, Alberta (below Berry Creek), Belly River series (particularly Oldman formation). Upper Cretaceous.

2. Red Deer River, Alberta (82-P-10, 15). Edmonton series. Upper Cretaceous.

3. Jordans Local, northwest of Rumsey, Alberta (SE ¼ S. 31, T. 34, R. 21, W. of 4th Meridian). From about 150′ below the top of the Edmonton beds and 20′ above the uppermost of the two coal seams (seam no. 12). Upper Cretaceous.

4. Milk River formation, Southern Alberta. Upper Cretaceous (Campanian).

5. Rocky Creek and Morgan Creek, on the southern face of Wood Mountain Plateau, Saskatchewan (near head of creek, S. 15, T. 1, R. 4, W. of 3rd meridian). Lance formation (Lower Ravenscrag). Paleocene.

Type: American Museum of Natural History, tooth from the Upper Cretaceous of Montana.

Canadian Material: National Museum of Canada, Ottawa, from all five localities.

Myledaphus sp.

1932 *Myledaphus* sp., Russell, p. 128 (c)
1935 *Myledaphus* sp., Russell, p. 120, pl. 2, fig. 1 (c)
1940 *Myledaphus* sp., Russell & Landes, p. 33 (c)

Localities: 1. Southeast of Deadhorse Coulée, Alberta (L.sd.8, S. 32, T. 1, R, 11, W. of 4th Meridian). From about 50′ above the Lower Milk River sandstone. Upper Cretaceous (Campanian).

2. Little Sandhill Creek, Badlands of Alberta. Oldman formation. Upper Cretaceous (Campanian).

3. Also from the Oldman formation at Manyberries, Alberta.

Material: Russell Collection

Elasmobranchii Incertae Sedis

Genus *Stethacanthus* Newberry 1889

Stethacanthus sp.

1929 *Stethacanthus*—Bell, p. 35 (c)

Locality: Horton Windsor District, Nova Scotia. Horton Bluff formation. Coal Measures.

Material: National Museum of Canada, Ottawa.

Super-Class TELEOSTOMI

Class Acanthodii

Order CLIMATIIFORMES

Sub-order Climatioidei

Family Climatiidae

Genus *Climatius* Agassiz 1845

Climatius latispinosus (Whiteaves) (C)

1881f *Ctenacanthus latispinosus* Whiteaves, p. 99 (c)

1883 *Ctenacanthus latispinosus* Whiteaves: Ells, p. 9D (c)
1889a *Ctenacanthus latispinosus* Whiteaves: Whiteaves, p. 95, pl. 10, figs. 3, 3a, 3b (c)
1889 *Climatius latispinosus* (Whiteaves) Woodward, p. 183
1891 *Climatius* (?) *latispinosus* (Whiteaves): Woodward, p. 33
1892a *Climatius latispinosus* (Whiteaves): Woodward, p. 3
1902 *Climatius? latispinosus* (Whiteaves): Hay, p. 274
1905 *Climatius latispinosus* (Whiteaves): Lambe, pp. 33, 41
1907 *Climatius? latispinosus* (Whiteaves): Whiteaves, p. 257 (c)
1907 *Climatius latispinosus* (Whiteaves): Eastman, p. 13
1908 *Climatius latispinosus* (Whiteaves): Eastman, p. 276
1910 *Climatius? latispinosus* (Whiteaves): Smith, p. 663
1929 *Climatius latispinosus* (Whiteaves): Hay, p. 544

Locality: The south bank of the Restigouche River, a ½ mile west of Campbellton, New Brunswick. In argillaceous beds. Lower Devonian (see Alcock, 1935)

Type: National Museum of Canada, Ottawa, no. 3242A, a fin spine from near Campbellton.

Climatius sp.

1955 *Climatius* sp., Denison, p. 458, fig. 113, b & c (c)
1957 Acanthodian spines and scales, Denison, p. 413 (c)

Locality: From a small knoll on the west side of McArras Brook road, 130 yds. south of the shore road and about 3 miles southwest of Arisaig, Antigonish County, Nova Scotia. About 100′ above bed 44 of Fletcher's section (Ami. 1901), thus presumably bed 53; or conversely bed 22 of Leonard's section (Leonard, 1951). Approximately 760′ above the lowermost exposure of the Knoydart formation. Lower Devonian (Lower Dittonian).

Material: Chicago Museum of Natural History, Chicago, PF. 1223, 1225, spines and jaw, from the Lower Devonian of McArras Brook.

1962 *Climatius*—Dineley, p. 1, fig. 1 (c)

Locality: Small headland, half-way between the outcrop of the "Red Stratum" and the mouth of Stonehouse Brook on the coast west of Arisaig, Antigonish County, Nova Scotia (11-E-16, Malignant Cove). From three inches of light grey, shell-packed calcareous siltstone, some 400′ above the top of the "Red stratum". Stonehouse formation. Upper Silurian (McLearn, 1924).

Material: National Museum of Canada, Ottawa, no. 10011, an isolated spine.

Genus *Nostolepis* Pander 1856

Nostolepis sp.

1960 *Nostolepis* sp. cf. *Nostolepis striata* Pander, Walliser (in Boucot *et al.*), p. 59, pl. 8, figs. 21a-c (c)

Locality: Devon Island, Northwest Territories, Southerland River formation. Upper Silurian?

Material: National Museum of Canada, Ottawa (G.S.C. no. 15071) from Devon Island.

Sub-order Diplacanthoidei

Family Diplacanthidae

Genus *Diplacanthus* Duff 1842 (amended)

Diplacanthus crassisimus Duff

1841 "Ichthyolite", Miller, pl. 8, fig. 2
1842 *Diplocanthus crassisimus* Duff, p. 71, pl. 10, fig. 2
1844 *Diplacanthus striatus* Agassiz, V.G.R. pp. 34, 41, pl. 14, figs. 1–5
1844 *Diplacanthus striatulus* Agassiz, V.G.R. pp. 34, 42, pl. 13, figs. 3, 4
1844 *Diplacanthus crassispinus* Agassiz, V.G.R., pp. 34, 43, pl. 13, figs. 1, 2
1848 *Diplacanthus gibbus* M'Coy, p. 301
1855 *Diplacanthus gibbus* M'Coy: M'Coy, p. 584, pl. 28, fig. 4
1881 *Diplacanthus striatus* Agassiz: Whiteaves, p. 494 (c)
1888 *Diplacanthus striatus* Agassiz: Traquair, p. 512
1891 *Diplacanthus striatus* Agassiz: Woodward, p. 24
1896 *Diplacanthus striatus* Agassiz: Traquair (in Brown & Buckey), p. 224, pl. 2, fig. 1
1902 *Diplacanthus crassisimus* Duff: Hay, p. 274
1905 *Diplacanthus striatus* Agassiz: Lambe, pp. 34, 40
1907 *Diplacanthus striatus* Agassiz: Dean, p. 218
1907 *Diplacanthus striatus* Agassiz: Eastman, p. 16
1908 *Diplacanthus striatus* Agassiz: Eastman, p. 280
1910 *Diplacanthus striatus* Agassiz: Smith, p. 663
1913 *Diplacanthus striatus* Agassiz: Clarke, p. 115 (c)
1929 *Diplacanthus crassisimus* Duff: Hay, p. 544
1935 *Diplacanthus striatus* Agassiz: Watson, p. 158, text-fig. 23
1937 *Diplacanthus striatus* Agassiz: Watson, p. 88, text-figs. 14–16, pls. 10, 11
1940 *Diplacanthus striatus* Agassiz: Gross, p. 4
1947 *Diplacanthus striatus* Agassiz: Gross, p. 126
1954 *Diplacanthus striatus* Agassiz: Waterston, p. 11
1965b *Diplacanthus striatus* Agassiz: Miles (in press)

Locality: Presumably Maguasha West, on the southwest side of the Gaspé Peninsula, on the shore of Escuminac Bay, Quebec. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Type: The type of Duff (1842), from the Moray Firth area appears to have disappeared completely. Agassiz' (1844) type of *D. striatus* from the Middle Old Red Sandstone of Cromarty, Rosshire, is in the Royal Scottish Museum, nos. 1859.33.1. and counterpart no. 1859.33.2. Agassiz' (1844) types of *D. striatulus* from Lethen Bar. Nairnshire, are in the British Museum (Natural History) (no. P.543) and in the Institut de géologie de l'Université de Neuchâtel. Agassiz (1844) types of *D. crassispinus* from Orkney are also in the British Museum (Natural History) (no.

43018) and in the Institut de géologie de l'Université de Neuchâtel. M'Coy's (1848) type of *D. gibbus* is in the Woodwardian Museum, Cambridge.

Canadian material: National Museum of Canada, Ottawa.

Remarks: Although this genus was first referred to as *Diplocanthus* by Duff, 1842, it is clear that *Diplacanthus* is the accurate transposition from the Greek and thus *Diplacanthus* must be the corrected spelling of the generic name.

Diplacanthus horridus Woodward (C)

1892b *Diplacanthus horridus* Woodward, p. 482, pl. 13, fig. 1 (c)
1905 *Diplacanthus horridus* Woodward: Lambe, pp. 34, 40
1907 *Diplacanthus horridus* Woodward: Whiteaves, p. 247 (c)
1907 *Diplacanthus horridus* Woodward: Eastman, p. 16
1908 *Diplacanthus horridus* Woodward: Eastman, p. 280
1910 *Diplacanthus horridus* Woodward: Smith, p. 663
1913 *Diplacanthus horridus* Woodward: Clarke, p. 115 (c)
1929 *Diplacanthus horridus* Woodward: Hay, p. 544
1935 *Diplacanthus horridus* Woodward: Alcock, p. 88 (name only) (c)
1951a *Diplacanthus horridus* Woodward: Russell, p. 405, figs. 3, 4 (c)
1957 *Diplacanthus horridus* Woodward: Ørvig, p. 372, fig. 1G
1965b *Diplacanthus horridus* Woodward: Miles (in press)

Locality: Maguasha West, on the southwest side of the Gaspé Peninsula, on the shore of Escuminac Bay, Quebec. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Type: British Museum (Natural History), no. P.6756 and counterpart P.6757, imperfect specimen from the Upper Devonian of Maguasha West.

Diplacanthus sp.

1883 *Diplacanthus* sp., Ells, p. 10D (c)

Locality: Presumably Maguasha West, on the southwest side of the Gaspé Peninsula, on the shore of Escuminac Bay, Quebec. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Material: National Museum of Canada, Ottawa.

Genus *Homacanthus* Agassiz 1845

"Homacanthus gracilis" Whiteaves (C)

1881f *Homacanthus* sp., Whiteaves, p. 99 (c)
1883 *Homacanthus* sp., Ells, p. 9D (c)
1889a *Homacanthus gracilis* Whiteaves, p. 95, pl. 10, fig. 4 (c)
1891 *Homacanthus gracilis* Whiteaves: Woodward, p. 106
1902 *Homancanthus gracilis* Whiteaves: Hay, p. 329
1905 Spine of ? Acanthodian fish (*Homacanthus gracilis* Whiteaves), Lambe, pp. 33, 41
1907 Spine of ? Acanthodian, Whiteaves, p. 258 (c)
1907 *Homacanthus gracilis* Whiteaves: Eastman, p. 13
1908 *Homacanthus gracilis* Whiteaves: Eastman, pp. 152, 276

1929 *Homacanthus gracilis* Whiteaves: Hay, p. 624
1935 *Climatius gracilis* (Whiteaves) Alcock, p. 81 (name only) (c)

Locality: South side of the Restigouche River, about ½ mile west of Campbellton, New Brunswick, from argillaceous beds. Lower Devonian (see also Alcock, 1935).

Type: National Museum of Canada, Ottawa, no. 657, from the Lower Devonian of Campbellton.

Remarks: This species is not synonymous with *Homacanthus gracilis* (Eichwald) which comes from the Middle Devonian of Europe. It even doubtfully belongs to the genus *Homacanthus*.

Family Gyrancanthidae

Genus *Gyrancanthus* Agassiz 1836

Gyracanthus duplicatus Dawson (C)

1868 *Gyracanthus duplicatus* Dawson, p. 210, fig. 55 (c)
1889 *Gryacanthus duplicatus* Dawson: Newberry, p. 124
1891 *Gyracanthus duplicatus* Dawson: Woodward, p. 144
1902 *Gyracanthus duplicatus* Dawson: Hay, p. 335
1905 *Gyracanthus duplicatus* Dawson: Lambe, pp. 19, 35, 42
1913 *Gyracanthus duplicatus* Dawson: Bell, pp. 340, 343 (c)
1929 *Gyracanthus duplicatus* Dawson: Hay, p. 541
1959 *Gyracanthus duplicatus* Dawson: Copeland, faunal list (c)

Locality: South Joggins, Nova Scotia. From the Cumberland Group, facies B. Coal Measures (Early Westphalian B).

Type: Dawson Collection, Redpath Museum, McGill University, Montreal, from South Joggins.

Gyracanthus incurvus Traquair (C)

1890 *Gyracanthus incurvus* Traquair, p. 21 (c)
1891 *Gyracanthus incurvus* Traquair: Woodward, p. 144
1892a *Gyracanthus incurvus* Traquair: Woodward, p. 3, pl. 1
1899 *Gyracanthus incurvus* Traquair: Whiteaves, p. 227 (name only)
1902 *Gyracanthus incurvus* Traquair: Hay, p. 335
1905 *Gyracanthus incurvus* Traquair: Lambe, pp. 16, 34, 42
1907 *Gyracanthus incurvus* Traquair: Whiteaves, p. 258 (c)
1907 *Gyracanthus incurvus* Traquair: Eastman, p. 13
1908 *Gyracanthus incurvus* Traquair: Eastman, pp. 114, 276, 278
1918 *Gyracanthus incurvus* Traquair: Hussakof & Bryant, p. 143
1929 *Gyracanthus incurvus* Traquair: Hay, p. 541
1935 *Gyracanthus incurvus* Traquair: Alcock, p. 81 (name only) (c)

Locality: South side of the Restigouche River, about ½ mile west of Campbellton, New Brunswick. From argillaceous beds. Lower Devonian (see also Alcock, 1935).

Type: Royal Scottish Museum, Edinburgh, no. 1887.20.58. from Campbellton.

Gyracanthus magnificus Dawson (C)

1868 *Gyracanthus magnificus* Dawson, p. 210, fig. 55a (c)

1875 *Gyracanthus magnificus* Dawson: Newberry, p. 57
1891 *Gyracanthus magnificus* Dawson: Woodward, p. 145
1902 *Gyracanthus magnificus* Dawson: Hay, p. 335
1905 *Gyracanthus magnificus* Dawson: Lambe, pp. 18, 34, 42
1929 *Gyracanthus magnificus* Dawson: Hay, p. 541

Locality: Cape Breton Island, Nova Scotia. Lower Carboniferous.
Type: Halifax Museum, Nova Scotia, from Cape Breton Island.

Gyracanthus sp.

1961 *Gyracanthus* sp., Baird, p. 340 (c)

Locality: Near Parrsboro, Nova Scotia. From the Upper Parrsboro formation (Riversdale group). Lower Pennsylvanian.

Genus *Oracanthus* Agassiz 1836

Oracanthus sp.

1929 *Oracanthus* sp., Bell, pp. 54, 187, pl. 35, figs. 2, 2a, 2b (c)

Locality: Near the mouth of the St. Croix River, Dimock, New Brunswick. Upper Windsor, subzone E, locality 7505 of Bell, 1929.
Material: National Museum of Canada, Ottawa, from mouth of St. Croix River.
Remarks: This is probably an acanthodian.

Order ISCHNACANTHIFORMES

Family Ischnacanthidae

Genus *Gomphodus* Pander 1856

Gomphodus jexi Woodward (C)

1892a *Protodus jexi* Woodward, p. 2, pl. 1, figs. 1, 1a (c)
1895 *Protodus jexi* Woodward: Jaekel, p. 161
1899 *Protodus jexi* Woodward: Whiteaves, p. 227 (name only)
1905 *Protodus jexi* Woodward: Lambe, pp. 33, 40
1907 *Protodus jexi* Woodward: Whiteaves, p. 256 (c)
1907 *Protodus jexi* Woodward: Eastman, p. 13
1908 *Protodus jexi* Woodward: Eastman, p. 275
1929 *Protodus jexi* Woodward: Hay, p. 539
1935 *Protodus jexi* Woodward: Alcock, p. 81 (name only) (c)

Locality:The south side of the Restigouche River, about ½ mile west of Campbellton, New Brunswick. From argillaceous beds. Lower Devonian (see also Alcock, 1935).
Types: British Museum (Natural History), syntypes nos. P.6539-a–c, P. 6538 from the Restigouche River.

Genus *Onchus* Agassiz 1837

Onchus murchisoni Agassiz

1837 *Onchus murchisoni* Agassiz, *3*, p. 6, pl. 1, figs. 1, 2
1839 *Onchus murchisoni* Agassiz (in Murchison), p. 607, pl. 4, figs. 9, 10, 11
1853 *Onchus murchisoni* Agassiz: M'Coy, p. 13

1853 *Leptocheles murchisoni* (Agassiz) McCoy, p. 14
1853 *Onchus murchisoni* Agassiz: Slater (in Murchison), p. 16
1863 *Onchus* sp., Billings, p. 395 (c)
1891 *Onchus murchisoni* Agassiz: Woodward, p. 94
1900a *Onchus murchisoni* Agassiz: Woodward, p. 203
1901a *Onchus murchisoni* Agassiz: Woodward, p. 312
1901a *Onchus murchisoni* Agassiz: Ami, pp. 309, 312 (c)
1902a *Onchus murchisoni* Agassiz: Woodward, p. 203
1908 *Onchus* sp., Eastman, p. 276
1914 *Onchus murchisoni* Agassiz: Williams, pp. 21, 75 (c)
1955 *Onchus murchisoni*: Denison, p. 458, text-fig. 113A (c)

Localities: 1. McArras Brook, north of Antigonish, Kings County, Nova Scotia. From the grey sandstone (ash bed) outcropping to the south of the shore road along the west bank of McArras Brook, Knoydart formation. Lower Devonian.

2. Also recorded from the Gaspé area, Quebec. Lower Devonian.

Type: According to Murchison, 1853, p. 16, the type specimens were lost, but Jeannet, 1928, p. 106, claims at least one of the original types to be in the Institut de géologie de l'Université de Neuchâtel, and this came from the Ludlow bone bed, Ludlow, Shropshire.

Remarks: This genus is probably synonymous with *Ischnacanthus*.

Onchus sp.

1955 *Onchus* sp., Denison, p. 458, fig. 113A (c)

Locality: From a small knoll on the west side of McArras Brook road, 130 yds. south of the shore road and about 3 miles southwest of Arisaig, Antigonish County, Nova Scotia. About 100′ above bed 44 of Fletcher (Ami, 1901) and thus corresponding to bed 53 of Fletcher or bed 22 of Leonard (1951: 72), and 760′ above the lowermost exposure of the Knoydart formation. Knoydart formation. Lower Devonian.

Material: Chicago Museum of Natural History, Chicago, no. PF.1220, a small spine.

Remarks: *Onchus* sp. is also recorded from Pelee Island, Lake Erie, Ontario, and Anderton Township, Ontario. Onondagan. Middle Devonian.

1962 *Onchus* sp., Dineley, p. 3
1963 *Onchus*—Dineley, p. 523

Locality: Cliff sections west of Arisaig, Antigonish County, Nova Scotia. "Red Stratum". Upper Silurian (McLearn, 1924; Dineley, 1963).

Genus *Doliodus* Traquair 1893

Doliodus problematicus (Woodward) (C)

1892a *Diplodus problematicus* Woodward, p. 2, pl. 1, fig. 2 (c)
1893a *Doliodus problematicus* (Woodward) Traquair, p. 145
1895 *Doliodus problematicus* Woodward: Jaekel, p. 161
1902 *Doliodus problematicus* (Woodward): Hay, p. 267
1905 *Doliodus problematicus* (Woodward): Lambe, pp. 16, 33, 40

1907 *Doliodus problematicus* (Woodward): Whiteaves, p. 257 (c)
1907 *Doliodus problematicus* (Woodward): Eastman, p. 13
1908 *Doliodus problematicus* (Woodward): Eastman, p. 275
1929 *Doliodus problematicus* (Woodward): Hay, p. 540
1935 *Doliodus problematicus* (Woodward): Alcock, p. 81 (name only) (c)

Locality: On the south side of the Restigouche River, about ½ mile west of Campbellton, New Brunswick. From argillaceous beds. Lower Devonian (but see Alcock, 1935).

Type: British Museum (Natural History), no. P.6540, from the Lower Devonian of Campbellton.

"Dendrodus" arisaigensis Whiteaves (C)

1897 *Dendrodus arisaigensis* Whiteaves, p. 461, fig. 1 (c)
1898a *Dendrodus arisaigensis* Whiteaves, p. 656 (c)
1902 *Dendrodus arisaigensis* Whiteaves: Hay, p. 359
1905 *Dendrodus arisaigensis* Whiteaves: Lambe, pp. 15, 33, 42
1907 *Dendrodus arisaigensis* Whiteaves: Eastman, p. 13
1908 *Dendrodus arisaigensis* Whiteaves: Eastman, p. 276
1912 *Dendrodus arisaigensis* Whiteaves: Lambe, p. 3
1914 *Dendrodus arisaigensis* Whiteaves: Williams, p. 22 (c)
1929 *Dendrodus arisaigensis* Whiteaves: Hay, p. 675
1935 *Dendrodus arisaigensis* Whiteaves: Romer & Groove, p. 812

Locality: McDonald Brook, near Arisaig, Nova Scotia. From the Upper Arisaig series of the Knoydart formation (possibly Stonehouse). Silurian.

Type: National Museum of Canada, Ottawa, from the Silurian of McDonald Brook.

Remarks: This is certainly not a crossopterygian, and is not too far removed from the genus *Ischnacanthus*.

Order ACANTHODIFORMES

Family Mesacanthidae

Genus *Mesacanthus* Traquair 1888

Mesacanthus semistriatus (Woodward) (C)

1883 *Acanthodes* sp., Ells, p. 10D (c)
1892a *Acanthodes semistriatus* Woodward, p. 3, pl. 1, fig. 3 (c)
1899 *Acanthodes semistriatus* Woodward: Whiteaves, p. 227 (name only)
1900a *Acanthodes* sp., Woodward, p. 303A
1902 *Acanthoëssus semistriatus* (Woodward) Hay, p. 273
1905 *Acanthodes semistriatus* Woodward: Lambe, pp. 34, 41
1907 *Acanthodes semistriatus* Woodward: Eastman, p. 13
1907 *Mesacanthus semistriatus* (Woodward) Whiteaves, p. 256 (c)
1908 *Acanthodes semistriatus* Woodward: Eastman, p. 275
1910 *Acanthodes semistriatus* Woodward: Smith, p. 663
1929 *Acanthoëssus semistriatus* (Woodward): Hay, p. 543

Locality: On the south side of the Restigouche River, about ½ mile west of Campbellton, New Brunswick. From argillaceous beds. Lower Devonian (see also Alcock, 1935).

Type: British Museum (Natural History), no. P.6545, from Campbellton.

Genus *Triazeugacanthus* Miles 1965

Triazeugacanthus affinis (Whiteaves) (C)

1883a *Acanthodes mitchelli* ? Egerton, Whiteaves, p. 354
1883b *Acanthodes mitchelli* ? Egerton, Whiteaves, p. 160
1887 *Acanthodes mitchelli* ? Egerton: Whiteaves, p. 107 (c)
1889a *Acanthodes affinis* Whiteaves, p. 91, pl. 5, figs. 1, 1a–c (c)
1890 *Mesacanthus affinis* (Whiteaves) Traquair, p. 16
1891 *Acanthodes affinis* Whiteaves: Woodward, p. 14
1899 *Acanthodes affinis* Whiteaves: Whiteaves, p. 226 (c)
1902 *Mesacanthus affinis* (Whiteaves): Woodward (in Zittel), p. 21
1902a *Acanthodes affinis* Whiteaves: Eastman, p. 536
1902 *Mesacanthus affinis* (Whiteaves): Eastman, pp. 93, 95
1902 *Acanthoëssus affinis* (Whiteaves) Hay, p. 273
1905 *Acanthodes affinis* Whiteaves: Lambe, pp. 34, 41
1907 *Mesacanthus affinis* (Whiteaves): Whiteaves, p. 247
1907 *Acanthodes affinis* Whiteaves: Eastman, p. 16
1908 *Acanthodes affinis* Whiteaves: Eastman, p. 280
1910 *Acanthodes affinis* Whiteaves: Smith, p. 663
1929 *Acanthoëssus affinis* (Whiteaves): Hay, p. 543
1935 *Acanthoëssus affinis* (Whiteaves): Alcock, p. 88 (name only) (c)
1935 *Mesacanthus affinis* (Whiteaves): Graham-Smith, p. 473 (c)
1950 *Acanthoëssus affinis* (Whiteaves): Gross, p. 83
1951a *Homalacanthus affinis* (Whiteaves) Russell, pp. 403, 405, fig. 2 (c)
1957 *Homalacanthus affinis* (Whiteaves): Ørvig, p. 372, fig. 1E
1965b *Triazeugacanthus affinis* (Whiteaves) Miles, figs. 17, 18, pls. 5–9

Locality: Maguasha West, on southwest side of the Gaspé Peninsula, on the shore of Escuminac Bay, Quebec. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Types: National Museum of Canada, Ottawa, nos. 4330 and 4404 nearly complete fish from Maguasha West.

Family Cheiracanthidae

Genus *Cheiracanthus* Agassiz 1835

? *Cheiracanthus costellatus* Traquair (C)

1893a ? *Cheiracanthus costellatus* Traquair, p. 146 (c)
1899 *Cheiracanthus costellatus* Traquair: Whiteaves, p. 227 (name only)
1902 *Cheiracanthus costellatus* Traquair: Hay, p. 274
1902 *Sphenacanthus costellatus* (Traquair) Woodward (in Zittel), p. 27
1905 *Cheiracanthus costellatus* Traquair: Lambe, pp. 34, 41 (c)
1907 *Cheiracanthus costellatus* Traquair: Eastman, p. 13
1907 *Cheiracanthus costellatus* Traquair: Whiteaves, p. 256
1908 *Cheiracanthus costellatus* Traquair: Eastman, p. 275

1910 *Cheiracanthus costellatus* Traquair: Smith, p. 663
1929 *Cheiracanthus costellatus* Traquair: Hay, p. 543
1935 *Cheiracanthus costellatus* Traquair: Alcock, p. 81 (name only) (c)
1954 *Cheiracanthus costellatus* Traquair: Waterston, p. 12

Locality: South side of Restigouche River, about a ½ mile west of Campbellton, New Brunswick. In argillaceous beds. Lower Devonian (Alcock, 1935, suggests Middle Devonian).

Type: The Royal Scottish Museum, Edinburgh, no. 1897.51.92, from the Lower Devonian of Campbellton.

Genus *Homalacanthus* Russell 1951

Homalacanthus concinnus (Whiteaves) (C)

1887 *Acanthodes concinnus* Whiteaves, p. 107, pl. 10, figs. 1, 1a (c)
1889a *Acanthodes concinnus* Whiteaves: Whiteaves, p. 91, pl. 5, fig. 2 (c)
1890 *Acanthodes concinnus* Whiteaves: Traquair, p. 16
1891 *Acanthodes concinnus* Whiteaves: Woodward, p. 10
1899 *Acanthodes concinnus* Whiteaves: Whiteaves, p. 226 (name only)
1902 *Mesacanthus concinnus* (Whiteaves) Eastman, p. 93
1902 *Acanthoëssus concinnus* (Whiteaves) Hay, p. 273
1905 *Acanthodes concinnus* Whiteaves: Lambe, pp. 34, 41
1907 *Acanthodes concinnus* Whiteaves: Whiteaves, p. 246 (c)
1907 *Acanthodes concinnus* Whiteaves: Eastman, p. 16
1908 *Acanthodes concinnus* Whiteaves: Eastman, p. 280
1910 *Acanthodes concinnus* Whiteaves: Smith, p. 663
1913 *Acanthodes concinnus* Whiteaves: Clarke, p. 113 (c)
1918 *Acanthodes concinnus* Whiteaves: Hussakof & Bryant, p. 141, pl. 51, figs. 2, 4, text-fig. 50
1929 *Acanthoëssus concinnus* (Whiteaves): Hay, p. 543
1935 *Acanthoessus concinnus* (Whiteaves): Alcock, p. 88 (name only) (c)
1936 *Paracanthodes concinnus* (Whiteaves) Graham-Smith, p. 598, fig. 5
1950 *Acanthoëssus concinnus* (Whiteaves): Gross, p. 83
1951a *Homalacanthus concinnus* (Whiteaves) Russell, p. 402, fig. 1
1957 *Homalacanthus concinnus* (Whiteaves): Ørvig, p. 372, fig. 1F
1965b *Homalacanthus concinnus* (Whiteaves): Miles, figs. 13, 14, 16, pls. 3, 4

Locality: Maguasha West, on the southwest side of the Gaspé Peninsula, on the shore of Escuminac Bay, Quebec. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Type: National Museum of Canada, Ottawa, no. 4331, an imperfect fish from Maguasha West (Probably from Zone 1 or 2, Russell, 1939).

Remarks: Although Graham-Smith, 1936, used the name *Paracanthodes concinnus* (Whiteaves) as a legend for a figure of a tail, by no stretch of the imagination can he be said to have proposed it expressly as a replacement for the pre-existing name *Acanthodes concinnus* Whiteaves. The figure in any case is poor and might just as well be a figure of *Triazeugacanthus affinis* (Whiteaves).

Ichthyoidichnites acadiensis Ami (C)

1887 Footprints like *Protichnites carbonarius*, Fletcher p. 68P
1902 *Ichthyoidichnites acadiensis* Ami, p. 330, pl. 2 (c)
1914 *Ichthyoidichnites acadiensis* Ami: Williams, pp. 21, 75 (c)

Locality: Knoydart Farm (near McArras Brook schoolhouse), McArras Brook, north of Antigonish, Arisaig district, Nova Scotia. From a grey-red sandstone outcropping to the south of the shore road. Knoydart formation. Lower Devonian.

Type: National Museum of Canada, Ottawa, no. 15, tracks on a slab, from McArras Brook.

Remarks: These tracks are very uniform in appearance and look as if they have been left by an acanthodian swimming slowly over the sea bed, with its spines touching the substratum.

Acanthodian

1951 Undetermined Acanthodian, Ørvig, p. 414, fig. 18D (c)

Locality: Presumably Maguasha West, on the southwest side of the Gaspé Peninsula, on the shore of Escuminac Bay, Quebec. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Material: Swedish Museum of Natural History, Stockholm.

Class Actinopterygii

Sub-Class CHONDROSTEI

Order PALAEONISCIFORMES

Sub-order Palaeoniscoidei

Family Cheirolepidae

Genus *Cheirolepis* Agassiz 1835

Cheirolepis canadensis Whiteaves (C)

1881d *Cheirolepis canadensis* Whiteaves, p. 33 (c)
1883 *Cheirolepis canadensis* Whiteaves: Ells, p. 10D (c)
1889a *Cheirolepis canadensis* Whiteaves: Whiteaves, p. 90, pl. 8 (c)
1891 *Cheirolepis canadensis* Whiteaves: Woodward, p. 457
1902 *Cheirolepis canadensis* Whiteaves: Hay, p. 366
1905 *Cheirolepis canadensis* Whiteaves: Lambe, pp. 17, 34, 43
1907 *Cheirolepis canadensis* Whiteaves: Eastman, pp. 17, 171
1907 *Cheirolepis canadensis* Whiteaves: Whiteaves, p. 255
1908 *Cheirolepis canadensis* Whiteaves: Eastman, pp. 256, 280
1912 *Cheirolepis canadensis* Whiteaves: Lambe, p. 5
1913 *Cheirolepis canadensis* Whiteaves: Clarke, p. 115 (c)
1917 *Cheirolepis canadensis* Whiteaves: Eastman, p. 273
1918 *Cheirolepis canadensis* Whiteaves: Hussakof & Bryant, p. 181, pl. 57, figs. 1, 2
1929 *Cheirolepis canadensis* Whiteaves: Hay, p. 687
1935 *Cheirolepis canadensis* Whiteaves: Alcock, p. 88 (name only) (c)
1939 *Cheirolepis canadensis* Whiteaves: Russell, p. 9 (c)

1947 *Cheirolepis canadensis* Whiteaves: Gross, pp. 139, 156, figs. 25b, 26, 28
1947 *Cheirolepis canadensis* Whiteaves: Lehman, pp. 1–44, fig. 1
1953 *Cheirolepis canadensis* Whiteaves: Gross, pp. 85, 108, fig. 10c
1957 *Cheirolepis canadensis* Whiteaves: Ørvig, p. 372, fig. 10
1960 *Cheirolepis canadensis* Whiteaves: Jarvik, p. 35
1963 *Cheirolepis canadensis* Whiteaves: Gardiner, p. 32, fig. 15

Locality: Maguasha West, on the southwest side of the Gaspé Peninsula, on the shores of Escuminac Bay (opposite the lumbering centre of Dalhousie) Quebec. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Types: National Museum of Canada, Ottawa, syntypes nos. 4407, 4408, 4409 and 4327, all incomplete fish from Escuminac Bay.

Family Rhadinichthyidae

Genus *Rhadinichthys* Traquair 1877

Rhadinichthys alberti (Jackson) (C)

1851a *"Palaeoniscus"*, Jackson, p. 281
1851 *Palaeoniscus alberti* Jackson, p. 22, pl. 1, fig. 1, pl. 2, figs. 2, 2bis, 3, 4, 5, 6, 8 (c)
1851 *Palaeoniscus cairnsii* Jackson, p. 22, pl. 1, fig. 3 (c)
1852 *Palaeoniscus alberti* Jackson: Jackson, p. 138
1852 *Palaeoniscus cairnsii* Jackson: Jackson, p. 139
1853 *Palaeoniscus alberti* Jackson: Egerton, p. 115
1853 *Palaeoniscus cairnsii* Jackson: Egerton, p. 115
1868 *Palaeoniscus alberti* (?) Jackson: Dawson, p. 231, fig. 62 (c)
1877 *Palaeoniscus alberti* Jackson: Dawson, p. 338 (c)
1877 *Palaeoniscus cairnsii* Jackson: Dawson, p. 339
1877 *Rhadinichthys alberti* (Jackson) Traquair, p. 559
1877 *Rhadinichthys cairnsii* (Jackson) Traquair, p. 559
1878 *Palaeoniscus alberti* Jackson: Dawson, p. 231, fig. 62 (c)
1878 *Palaeoniscus alberti* Jackson: Dawson, p. 100 (suppl.)
1878 *Palaeoniscus cairnsii* Jackson: Dawson, p. 100 (suppl.)
1888 *Palaeoniscus alberti* Jackson: Sauvage, p. 49
1888 *Palaeoniscus cairnsii* Jackson: Sauvage, p. 49
1890 *Palaeoniscus alberti* Jackson: Newberry, p. 187
1890 *Palaeoniscus cairnsii* Jackson: Newberry, p. 187
1891 *Rhadinichthys alberti* (Jackson): Woodward, p. 465
1891 *Rhadinichthys cairnsii* (Jackson): Woodward, p. 465
1902 *Rhadinichthys alberti* (Jackson): Hay, p. 367
1902 *Rhadinichthys cairnsii* (Jackson): Hay, p. 367
1904 *Rhadinichthys cairnsii* (Jackson): Tornquist, p. 350
1905 *Rhadinichthys alberti* (Jackson): Lambe, pp. 18, 34, 43
1905 *Rhadinichthys cairnsii* (Jackson): Lambe, pp. 18, 34, 43
1908 *Elonichthys elegantulus* Eastman, p. 274 (c)
1908 *Rhadinichthys alberti* (Jackson): Eastman, p. 261
1908 *Rhadinichthys cairnsii* (Jackson): Eastman, p. 261

1909 *Elonichthys elegantulus* Eastman: Lambe, p. 167 (c)
1910 *Rhadinichthys alberti* (Jackson): Lambe, p. 18, pl. 3, figs. 1–6 (c)
1910 *Rhadinichthys alberti* (Jackson): Ells, pp. 14, 19 (c)
1910 *Rhadinichthys cairnsii* (Jackson): Ells, p. 14
1910 *Elonichthys elegantulus* Eastman: Lambe, p. 30 (c)
1910 *Elonichthys elegantulus* Eastman: Ells, pp. 10, 29, 30 (c)
1913 *Rhadinichthys alberti* (Jackson): Young, p. 356 (c)
1913 *Elonichthys elegantulus* Eastman: Young, p. 356 (c)
1918 *Rhadinichthys alberti* (Jackson): Hussakof & Bryant, p. 188, fig. 63
1918 *Rhadinichthys elegantulus* (Eastman) Hussakof & Bryant, p. 189, pl. 66, text-fig. 64
1924 *Rhadinichthys alberti* (Jackson): Kiaer, p. 99, fig. 44
1926 *Rhadinichthys alberti* (Jackson): Woodward & White, pp. 570, 571
1929 *Rhadinichthys alberti* (Jackson): Hay, p. 687
1929 *Rhadinichthys elegantulus* (Eastman): Hay, p. 688
1938 *Rhadinichthys alberti* (Jackson): Moy-Thomas, pp. 293, 299
1938 *Canobius modulus* = *Rhadinichthys alberti*: Moy-Thomas, pp. 293, 299
1939 *Rhadinichthys alberti* Lambe: Sternberg, p. 111, fig. 1, pl. 1 (c)

Locality: Albert Mine, Hillsborough, Albert County, New Brunswick. From bituminous shales. Lower Carboniferous.

Type: Museum of Comparative Zoology, Harvard, Cambridge, Mass., no. 1960, an incomplete fish from the Albert Mine. Eastman's type of *Rhadinichthys elegantulus* is also in this Museum, and it too came from the Albert Mine.

Remarks: Since this species only possesses a few branchiostegal rays it most probably belongs to the genus *Rhadinoniscus* White, *Rhadinichthys elegantulus* Eastman has also been included within the species *R. alberti*. Lambe as long ago as 1910, p. 31, suggested that *R. elegantulus* was probably the young of *R. alberti*, a view which I support.

Rhadinichthys sp.

1914a *Rhadinichthys* sp., Kindle, p. 288 (c)
1915 *Rhadinichthys* sp., Stauffer, pp. 184, 228 (c)
1929 *Rhadinichthys* sp., Bell, p. 35 (c)
1943 *Rhadinichthys* sp., Caley, p. 61 (c)
1946 *Rhadinichthys* sp., Caley, p. 47 (c)

Localities: 1. Horton-Windsor district, Nova Scotia. Coal Measures (Bell, 1929).

2. Kettle Point, a promontory projecting into Lake Huron in the northwestern part of Bosanquet Township, on the west side of Ipperwash Beach, Lambton County, Ontario. From the Kettle Point formation, in black shale underlying the lower beds of the Portage group. Upper Devonian (Stauffer, 1915; Kindle, 1914; Caley, 1943, 1946).

Remarks: *Rhadinichthys* sp. recorded by Kindle, Stauffer and Caley, is probably *Moythomasia* sp. (see Gardiner 1963 p. 298.)

Locality: Deer Lake, Newfoundland. Lower Carboniferous.
Material: British Museum (Natural History).
Remarks: This material is very probably *Rhadinichthys*.

Family Canobiidae

Genus *Canobius* Traquair 1881

Canobius modulus (Dawson) (C)

1877 *Palaeoniscus* (*Rhadinichthys*) *modulus* Dawson, p. 337, figs. a–d (c)
1878 *Palaeoniscus* (*Rhadinichthys*) *modulus* Dawson: Dawson, p. 98, fig. 18 a–d
1880 *Palaeoniscus modulus* Dawson: Bailey *et al.*, p. 18D
1890 *Palaeoniscus modulus* Dawson: Newberry, p. 187
1891 *Rhadinichthys modulus* (Dawson) Woodward, p. 466
1902 *Rhadinichthys modulus* (Dawson): Hay, p. 367
1905 *Palaeoniscus* (*Rhadinichthys*) *modulus* Dawson: Lambe, pp. 18, 35, 43
1908 *Rhadinichthys modulus* (Dawson): Eastman, p. 262, fig. 39
1909 *Canobius modulus* (Dawson) Lambe, p. 172, figs. 7–8 (c)
1910 *Canobius modulus* (Dawson): Lambe, p. 31, pl. 11, figs. 1–7 (c)
1910 *Palaeoniscus modulus* Dawson: Elles, p. 15 (c)
1912 *Canobius* (?) *modulus* (Dawson): Traquair, p. 171
1929 *Canobius modulus* (Dawson): Hay, p. 688
1938 *Canobius modulus* = *Rhadinichthys alberti*: Moy-Thomas, pp. 293, 299

Localities: 1. Beliveau, New Brunswick. Albert Shales. Lower Carboniferous.

2. Horton, Nova Scotia. Lower Carboniferous.

3. Mine shaft in the Petitcodiac River area, New Brunswick. From bituminous shales. Lower Carboniferous.

Type: Nearly complete fish from Beliveau, New Brunswick. Redpath Museum, McGill University, Montreal.

Remarks: Westoll in Moy-Thomas 1938 believes that the type of *Canobius modulus* (Dawson) is merely a peculiarly preserved specimen of *Rhadinichthys alberti* (Jackson) with which I agree. Thus *Canobius modulus* (Dawson) is synonymous with *Rhadinichthys alberti* (Jackson).

Family Elonichthyidae

Genus *Elonichthys* Giebel 1848

Elonichthys browni (Jackson) (C)

1851 *Palaeoniscus brownii* Jackson, p. 22, pl. 1, figs. 2, 4, 5 (c)
1852 *Palaeoniscus brownii* Jackson: Jackson, p. 138 (c)
1877 *Palaeoniscus brownii* Jackson: Dawson, p. 339 (c)
1877 *Palaeoniscus jacksonii* Dawson, p. 339 (c)
1877 *Elonichthys brownii* (Jackson) Traquair, p. 553
1878 *Palaeoniscus* (*Elonichthys*) *brownii* Jackson, Dawson, p. 101
1878 *Palaeoniscus jacksonii* Dawson: Dawson, p. 101

1890 *Palaeoniscus brownii* Jackson: Newberry, p. 187
1890 *Palaeoniscus jacksonii* Dawson: Newberry, p. 187
1891 *Elonichthys browni* (Jackson): Woodward, p. 501
1902 *Elonichthys browni* (Jackson): Hay, p. 368
1905 *Palaeoniscus brownii* Jackson: Lambe, pp. 18, 35, 43
1908 *Elonichthys browni* (Jackson): Eastman, p. 266
1909 *Elonichthys browni* (Jackson): Lambe, p. 169, figs. 3, 4 (c)
1910 *Elonichthys browni* (Jackson): Lambe, p. 22, pls. 4–9 (c)
1913 *Elonichthys brownii* (Jackson): Young, p. 356 (c)
1918 *Elonichthys browni* (Jackson): Hussakof & Bryant, p. 191
1926 *Elonichthys browni* (Jackson): Brown, in Hayes, p. 126c.
1929 *Elonichthys browni* (Jackson): Bell, p. 35 (c)
1929 *Elonichthys browni* (Jackson): Hay, p. 690

Localities: 1. Albert Mines, Hillsbrough, Albert County, New Brunswick. From the bituminous shales. Lower Carboniferous.

2. Sussex, New Brunswick. Lower Carboniferous.

3. Frederick Brook, Hillsbrough, New Brunswick. Lower Carboniferous.

Type: Incomplete fish, no. 1961, in the Museum of Comparative Zoology, Harvard, Cambridge, Massachusetts, from the Albert Mines.

Elonichthys ellsi Lambe (C)

1909 *Elonichthys ellsi* Lambe, p. 171, figs. 5, 6 (c)
1910 *Elonichthys ellsi* Lambe: Lambe, p. 29 pl. 10, figs. 1–6 (c)
1913 *Elonichthys ellsi* Lambe: Young, p. 356 (c)
1929 *Elonichthys ellsi* Lambe: Hay, p. 690

Locality: Albert Mines, Hillsbrough, Albert County, New Brunswick. Albert shales. Lower Carboniferous.

Type: National Museum of Canada, Ottawa, no. 4379 a nearly complete fish from Albert Mines.

Elonichthys sp.

1900a *Elonichthys* sp., Woodward, p. 203A (c)
1929 *Elonichthys* sp., Bell, p. 35 (c)
1961 *Elonichthys* sp., Baird, p. 340 (c)

Localities: 1. Horton Bluff and Trenholm Brook, Horton-Windsor District, Kings County, Nova Scotia. Coal Measures.

2. Near Parrsbro, Nova Scotia. From the Upper Parrsboro formation (Riversdale group). Lower Pennsylvanian.

Material: Some in the National Museum of Canada, Ottawa.

Locality: Deer Lake, Newfoundland. Lower Carboniferous.

Material: British Museum (Natural History).

Family Acrolepididae

Genus *Acrolepis* Agassiz 1844

Acrolepis hortonensis Dawson (C)

1868 *Acrolepis ? hortonensis* Dawson, p. 255, fig. 77e, f (c)
1891 *Acrolepis* (?) *hortonensis* Dawson: Woodward, p. 508

1902 *Acrolepis* ? *hortonensis* Dawson: Hay, p. 369
1905 *Acrolepis hortonensis* Dawson: Lambe, pp. 35, 43 (c)
1929 *Acrolepis* ? *hortonensis* Dawson: Hay, p. 691

Locality: Horton Bluff, Nova Scotia. Lower Carboniferous.

Type: Redpath Museum, McGill University, Montreal, fragment of jaw and scales, from Horton Bluff.

Acrolepis sp.

1878 *Acrolepis* sp., Dawson. p. 346 (c)
1887 *Acrolepis* sp., Fletcher, p. 72P (c)

Locality: Cape George, Antigonish County, Nova Scotia.

Family Amblypteridae

Genus *Amblypterus* Agassiz 1833

Amblypterus sp.

1876 *Amblypterus* sp., Robb, p. 199 (c)

Locality: 1. Limestone, Sydney Coal Field, Cape Breton, Nova Scotia, Coal Measures.

2. An additional locality in Albert Mine, New Brunswick. Coal Measures (material in the B.M.N.H.)

Material: National Museum of Canada, Ottawa.

Family Palaeoniscidae

Genus *Gyrolepis* Agassiz 1833

? *Gyrolepis* sp.

1876 *Gyrolepis* sp., Robb, p. 199 (c)

Locality: Sydney Coal Field, Cape Breton, Nova Scotia. Coal Measures.

Material: National Museum of Canada, Ottawa.

Remarks: This specimen clearly does not belong to the genus *Gyrolepis*. It is most probably an *Elonichthys*.

Genus *Palaeoniscus* Blainville 1818 (amended)

? *Palaeoniscus* sp. (C)

1872 *Palaeoniscus* sp., Bailey & Matthew, p. 206 (c)

Locality: Near Albert Mines, Hillsbrough, Albert County, New Brunswick. Lower Carboniferous.

Material: National Museum of Canada, Ottawa, from Albert Mines.

1878 *Palaeoniscus* sp., Bailey & Ells, pp. 357, 358 (c)

Locality: Elgin, a short distance east of Pollet River in the settlement of Marpleton, Albert County, New Brunswick. From the Albert Shales exposed by small streams in that area. Lower Carboniferous.

Material: National Museum of Canada, Ottawa, from Elgin.

1876 *Palaeoniscus* sp., Robb, p. 199 (c)

Locality: Sydney Coal Field, Cape Breton, Nova Scotia. Coal Measures. Upper Carboniferous.

1878 *Palaeoniscus* sp., Dawson, p. 346 (c)
1887 *Palaeoniscus* sp., Fletcher, p. 72P (c)
1959 *Palaeoniscus* sp., Copeland, p. faunal list

Locality: Cape George, Arisaig Peninsula, Antigonish County, Nova Scotia.

1880 *Palaeoniscus* sp., Bailey *et al.*, p. 16D (c)

Locality: Southwest branch of Trout Creek, near the road crossing to Dutch Valley, Kings County, New Brunswick.

1940 Palaeoniscoid fish scales, Bell, p. 49 (c)

Locality: Pictou Coalfield, Nova Scotia. From the Coal Brook and Thornburn members.

1913 *Palaeoniscus* sp., Bell, pp. 340, 343 (c)

Locality: Joggins, Nova Scotia. Upper Carboniferous.

Remarks: Much of the above material belongs to the genus *Rhadinichthys* and it is extremely doubtful that any of it belongs to the genus *Palaeoniscus*

Genus *Pteronisculus* White 1933

Pteronisculus ? *laetus* (Lambe) (C)

1916 *Acrolepis laetus* Lambe, p. 42, pl. 3 (c)
1921 *Acrolepis laetus* Lambe: Stensiö, p. 149
1925 *Acrolepis laetus* Lambe: Raymond, p. 553 (name only)
1929 *Acrolepis laetus* Lambe: Hay, p. 691

Locality: 2 miles east of Castle Mountain Railway Station on the trail to Johnson Creek, 2 miles north of Rangers cabin, Alberta (82-0-4). Lower Triassic. (Spray River)

Type: National Museum of Canada, Ottawa, no. 755A. Imperfect trunk wanting head, tail and fins, in counterpart, from near Castle Mountain Railway Station.

Remarks: Stensiö, 1921, p. 149, points out that this species does not belong to *Acrolepis*, and it would seem most likely to me that this species is in fact a member of the genus *Pteronisculus*.

Pteronisculus sp.

Locality: Scree slopes, south of Wapiti Lake, Ganoid Range, British Columbia. Spray River formation. Lower Triassic (Landon *et al.*, 1949; Forbes & McGugan, 1959).

Material: American Museum of Natural History, New York, and the National Museum of Canada, Ottawa.

Family Boreosomidae

Genus *Boreosomus* Stensiö 1921

Boreosomus sp.

Locality: Scree slopes south of Wapiti Lake, Ganoid Range, British Columbia. Spray River formation. Lower Triassic (Landon *et al.*, 1949; Forbes & McGugan, 1959).

Material: American Museum of Natural History, New York and the National Museum of Canada, Ottawa.

Order HAPLOLEPIFORMES

Family Haplolepididae

Genus *Haplolepis* Miller 1892

Haplolepis (*Parahaplolepis*) aff. *H. anglica*

1961 *Haplolepis* (*Parahaplolepis*) aff. *H. anglica*, Baird, p. 340

Locality: New Parrsboro, Nova Scotia. From the Upper Parrsboro formation (Riversdale group). Lower Pennsylvanian.

Material: Baird Collection.

Order SAURICHTHYIFORMES

Family Saurichthyidae

Genus *Saurichthys* Agassiz 1834

Saurichthys dayi (Raymond) (C)

1925 *Belonorhynchus dayi* Raymond, p. 551, fig. 1 (c)
1929 *Belonorhynchus dayi* Raymond: Hay, p. 694

Locality: Just west of the railway siding at Massive, 12 miles west of Banff, Alberta (82-0-4). Spray River formation. Lower Triassic.

Type: Museum of Comparative Zoology, Harvard, Cambridge, no. 1654 from near Massive.

Saurichthys sp.

Locality: Scree slopes south of Wapiti Lake, Ganoid Range, British Columbia. Spray River formation. Lower Triassic (Landon *et al.*, 1949; Forbes & McGugan, 1959).

Material: American Museum of Natural History, New York, and the National Museum of Canada, Ottawa.

Order PERLEIDIFORMES

Family Perleididae

Genus *Albertonia* Nov.

Albertonia cupidinia (Lambe) n. gen. (C)

1916 *Elonichthys cupidineus* Lambe, p. 39, pl. 2 (c)
1917 *Elonichthys cupidineus* Lambe: Burling, p. 293 (c)
1925 *Elonichthys cupidineus* Lambe: Raymond, p. 553 (name only)
1929 *Elonichthys cupidineus* Lambe: Hay, p. 690
1936 *Dollopterus cupidineus* (Lambe) Berg, p. 166
1937 *Dollopterus cupidineus* (Lambe): Aldinger, p. 206

Localities: 1. Railway cutting, C.P.R., a few hundred yards west of Massive, Alberta (82-0-4). Lower Triassic.

2. Scree slopes, Ganoid Range, near Lake Wapiti, British Columbia (Landon *et al.*, 1949). Lower Triassic (Spray River).

Type: National Museum of Canada, Ottawa, no. 757A. Incomplete trunk and head from Massive, Alberta.

Remarks: This peculiar fish with enlarged pectoral fins is clearly not a member of the genus *Elonichthys* neither is it at all closely related to the genus *Dollopterus*. The new genus *Albertonia* is erected to receive it, and it is suggested that *Albertonia* is a member of the Perleididae.

Order BOBASATRANIIFORMES

Family Bobasatraniidae

Genus *Bobasatrania* White 1932

Bobasatrania canadensis (Lambe) (C)

1914 *Platysomus canadensis* Lambe, p. 17, pl. + text fig. (c)
1916 *Platysomus canadensis* Lambe: Lambe, p. 36 (c)
1916a *Platysomus albertensis* Lambe, p. 195 (in error)
1916 *Platysomus canadensis* Lambe: Burling, p. 98
1921 *Platysomus canadensis* Lambe: Stensiö, pp. 251, 264
1925 *Platysomus canadensis* Lambe: Raymond, p. 555 (name only)
1929 *Platysomus albertensis* Lambe: Hay, p. 692
1929 *Platysomus canadensis* Lambe: Hay, p. 692
1932 "*Platysomus*" *canadensis* Lambe: Stensiö, p. 126
1936 *Platysomus brewsteri* Warren, p. 55 (c)
1951 *Bobasatrania ? canadensis* (Lambe) Russell, p. 218, pls. 45, 46
1958 *Lambeichthys canadensis* (Lambe) Lehman (in Grassé), p. 2147
1958 *Platysomus brewsteri* Warren: Lehman (in Grassé), p. 2147

Localities: 1. Near Johnson Creek, 2 miles east of Castle Mountain Railway Station, Alberta (82-0-4, Johnson Creek is a tributary of the Bow River 12 miles northwest of Banff). In the set of beds outcropping at Massive and on the Johnson Creek trail. Spray River formation. Lower Triassic.

2. Near Poboktan Pass, northwest of Brazeau Lake, 50 miles southeast of Jasper, Aberta (82-0-3). Spray River formation. Lower Triassic.

3. Fairy Creek, near Fernie, British Columbia. Spray River formation. Lower Triassic.

Type: National Museum of Canada, Ottawa, no. 342, from locality (1). Counterpart in the Banff Park Museum. Warren's type of *Platysomus brewsteri* came from locality (2) and is in the University of Alberta Geological Museum, Edmonton.

Order ACIPENSERIFORMES

Family Acipenseridae

Genus *Acipenser* Linnaeus 1758

Acipenser albertensis Lambe

1902 *Acipenser albertensis* Osborn, p. 11 (name only)
1902 *Acipenser albertensis* Lambe, p. 29, pl. 21, fig. 9 (c)
1902 *Acipenser albertensis* Lambe: Williston, p. 953
1905 *Acipenser albertensis* Lambe: Lambe, pp. 21, 36, 43
1905 *Acipenser albertensis* Lambe: Stanton & Hatcher, p. 69
1908 *Acipenser albertensis* Lambe: Cockerell, p. 163

1912 *Accipenser albertensis* Lambe: Peale, p. 754
1914 *Acipenser albertensis* Lambe: Brown, p. 378
1915 *Acipenser albertensis* Lambe: Bowen, pp. 118, 148
1916 *Accipenser albertensis* Lambe: Matthew, p. 485
1917 *Acipenser albertensis* ? Lambe: Lambe, p. 293
1919 *Acipenser albertensis* Lambe: Cockerell, p. 172
1925 *Acipenser albertensis* Lambe: Stromer, p. 357
1929 *Acipenser albertensis* Lambe: Hay, p. 696
1930 *Acipenser albertensis* Lambe: Sternberg in Williams & Dyer, p. 33 (c)
1956 *Acipenser albertensis* Lambe: Wilimovsky, p. 1206
1964 *Acipenser albertensis* Lambe: Estes, p. 21, fig. 11b (left)

Localities: 1. Belly River series, west side of Red Deer River, Alberta. Upper Cretaceous.

2. Edmonton beds (Lower, Middle & Upper Edmonton), Red Deer River, Alberta. Upper Cretaceous (Campanian—Maestrichtian).

3. Oldman formation. Red Deer River, Alberta. (Campanian).

4. Lower Ravenscrag, Nr. Eastend, Saskatchewan. Upper Cretaceous.

Type: National Museum of Canada, Ottawa, no. 1677. Large dorsal median scute. From the Oldman formation on the west side of Red Deer River, Alberta.

Acipenser eruciferus (Cope)

1876 *Ceratodus eruciferus* Cope, p. 259
1876 *Ceratodus heiroglyphus* Cope, p. 259
1891 *Ceratodus eruciferus* Cope: Woodward, p. 275
1902 *Rhineastes* (*Ceratodus*) *eruciferus* (Cope) Osborn, pp. 11, 16
1902 *Rhineastes eruciferus* (Cope): Lambe, p. 29 (c)
1902 *Ceratodus eruciferus* Cope: Hay, p. 356
1903 *Ceratodus eruciferus* Cope: Hay, p. 120
1905 *Rhineastes eruciferus* (Cope): Lambe, pp. 22, 36, 44
1905 *Ceratodus eruciferus* Cope: Hatcher, p. 68
1906 *Ceratodus eruciferus* Cope: Stromer, p. 207
1908 *Ceratodus eruciferus* Cope: Hussakof, p. 50
1908 *Ceratodus eruciferus* Cope: Cockerell, p. 162
1914 *Rhineastes* (*Ceratodus*) *eruciferus* (Cope): Brown, p. 378
1915 *Ceratodus eruciferus* Cope: Bowen, pp. 118, 148, 150
1916 *Rhineastes cruciferus* (Cope): Matthew, p. 484
1929 *Ceratodus eruciferus* Cope: Hay, p. 669
1930 *Ceratodus eruciferus* Cope: Sternberg in Williams & Dyer, p. 33 (c)
1964 *Acipenser eruciferus* (Cope): Estes, p. 20, figs. 10a, c, 11a, b (right)

Localities: 1. Oldman formation (Belly River series), Red Deer River, Alberta. Upper Cretaceous (Campanian).

2. Oldman formation, Belly River, Alberta. Upper Cretaceous (Campanian).

Type: Two fragments of sculptured bone in the Cope Collection of the American Museum of Natural History, New York. From the Laramie beds of Wyoming. Upper Cretaceous.

Acipenser sp.

1926 *Acipenser* sp., Sternberg, p. 104 (c)
1928 *Acipenser* sp., Mclearn, p. 336 (c)
1930 *Acipenser* sp., indt., Sternberg in Williams & Dyer, p. 49 (c)
1932 *Acipenser* sp., Russell, p. 128 (c)

Locality: Edmonton formation, Red Deer River, Alberta (82-P-10, 15). Upper Cretaceous (Campanian—Maestrichtian).

Sub-Class HOLOSTEI

Division Holosteans

Order SEMIONOTIFORMES

Family Semionotidae

Genus *Semionotus* Agassiz 1832

Semionotus cf *fulcatus* (Redfield)

1915 *Semionotus* cfr *fulcatus* (Redfield), Lambe, p. 120 (c)
1929 *Semionotus fulcatus* ? (Redfield), Hay, p. 704

Locality: Broad Cove, near Scott Bay, Kings County, Nova Scotia. From a siliceous limestone.

Material: National Museum of Canada, Ottawa, from Broad Cove.

Remarks: This specimen is probably not the same as *Semionotus fulcatus* (Redfield) from New Jersey.

Family Lepisosteidae

Genus *Lepisosteus* Lacepède 1803

Lepisosteus occidentalis (Leidy)

1856 *Lepidotus occidentalis* Leidy, p. 73
1856 *Lepidotus haydeni* Leidy, p. 73
1860 *Lepidotus occidentalis* Leidy: Leidy, pl. 11, figs. 20–23
1877 *Lepidotus occidentalis* Leidy: Cope, p. 574
1895 *Lepidotus occidentalis* Leidy: Woodward, p. 126
1896 *Lepidotus occidentalis* Leidy: Cross, p. 277
1902 *Lepidotus* (*Lepidosteus*) *occidentalis* Leidy, Osborn, pp. 11, 16 (name only)
1902 *Lepidotus occidentalis* Leidy: Lambe, p. 29, pl. 21, fig. 9 (c)
1902 *Lepisosteus occidentalis* (Leidy) Hay, p. 377
1902 *Lepisosteus occidentalis* (Leidy): Williston, p. 953
1903 *Lepisosteus occidentalis* (Leidy): Hay, p. 119
1905 *Lepidotus occidentalis* Leidy: Stanton & Hatcher, p. 67
1905 *Lepidotus haydeni* Leidy: Stanton & Hatcher, p. 68
1905 *Lepidotus occidentalis* Leidy: Lambe, pp. 21, 36, 43
1907 *Lepisosteus occidentalis* (Leidy): Brown, p. 842

1907 *Lepidotus occidentalis* Leidy: Lambe, p. 179 (c)
1908 *Lepidosteus occidentalis* (Leidy): Cockerell, p. 163
1908 *Lepidosteus haydeni* (Leidy) Cockerell, p. 163
1910a *Lepisosteus occidentalis* (Leidy): Hay, p. 296
1912 *Lepidotus occidentalis* Leidy: Peale, pp. 746, 754
1914 *Lepisosteus occidentalis* (Leidy): Brown, pp. 358, 378 (c)
1915 *Lepisosteus occidentalis* (Leidy): Bowen, pp. 118, 148
1915 *Lepisosteus haydeni* (Leidy): Bowen, pp. 118, 148
1916 *Lepisosteus occidentalis* (Leidy): Matthew, p. 485
1924 *Lepisosteus occidentalis* (Leidy): Sternberg, p. 68 (c)
1924 *Lepisosteus occidentalis* (Leidy): Gilmore, p. 27 (c)
1925 *Lepisosteus occidentalis* (Leidy): Stromer, p. 360
1928 *Lepisosteus occidentalis* (Leidy): McLearn, p. 33B (c)
1929 *Lepisosteus occidentalis* (Leidy): Hay, p. 708
1930 *Lepidosteus occidentalis* (Leidy): Sternberg (in Williams & Dyer), p. 33 (c)
1935 *Lepisosteus occidentalis* (Leidy): Fraser *et al.*, p. 42 (c)
1946 *Lepisosteus occidentalis* (Leidy): Furnival, p. 104 (c)
1964 *Lepisosteus occidentalis* (Leidy): Estes, p. 43, figs. 21, 22

Localities: 1. Red Deer River (below mouth of Berry Creek), Alberta. Belly River series. Upper Cretaceous (Campanian).

2. Ross Coulée, near Irvine, Alberta. Upper Cretaceous.

3. Rocky Creek and Morgan Creek, on the southern face of Wood Mountain Plateau, Saskatchewan (S. 15, T. 1, R., W. of 3rd Meridian). Lower Ravenscrag. Paleocene.

4. Oldman formation, Alberta. Upper Cretaceous (Campanian).

Type: Museum of the Academy of Sciences, Philadelphia, scales from the Badlands of Nebraska.

Lepisosteus longus Lambe (C)

1908 *Lepidosteus longus* Lambe, p. 13, pl. 1, figs. 7–9 (c)
1929 *Lepisosteus longus* Lambe: Hay, p. 708
1930 *Lepisosteus longus* Lambe: Sternberg (in Williams & Dyer), p. 72
1934 *Lepisosteus longus* Lambe: Russell, p. 51 (c)
1935 *Lepisosteus longus* Lambe: Russell (in Fraser *et al.*), p. 128 (name only) (c)

Locality: Bone Coulée and numerous tributary coulées along Fairwell Creek (on the north branch of the Frenchman River), Saskatchewan (T. 7 & 9, R. 21 & 22, W. of 3rd Meridian). Cypress Hills Beds, Lower Oligocene.

Type: National Museum of Canada, Ottawa, no. 6208, a mid-dorsal vertebra, from Bone Coulée.

Lepisosteus sp.

1875 *Clastes* sp., Cope, pl. 1 (c)
1905 *Lepidosteus* (*Clastes*) sp., Lambe, pp. 36, 43 (c)
1932 *Lepisosteus* sp., Russell, p. 128 (c)
1935 *Lepisosteus* sp., Russell, pp. 120, 140, 146, pl. 2, fig. 2 (c)

1940 *Lepisosteus* sp., Russell & Landes, p. 33 (c)
1957 *Lepisosteus* sp., Kupsch, p. 418 (c)

Localities: 1. Southeast side of Deadhorse Coulée, Alberta (L.sd. 8, S.32, T.1, R.11, west of 4th Meridian, about 50′ above the Lower Milk River sandstone) (L.sd. 12, S. 33, T. 1, R. 11, W. of 4th Meridian, about 40′ above the Lower Milk River sandstone, in a tributary valley on the southeast side of Deadhorse Coulée). Upper Cretaceous.

2. Willow Creek, Alberta. Willow Creek formation. Paleocene.

3. Assiniboia, Saskatchewan, Belly River series. Upper Cretaceous (Campanian).

4. Red Deer River, Alberta. Belly River series. Upper Cretaceous (Campanian).

5. Manyberries, Alberta.

6. Morgan Creek, Saskatchewan. Lance formation. Upper Cretaceous

7. Anxiety Bute, Saskatchewan (SE ¼ S. 28, T. 7, R. 21, W. of 3rd Meridian).

8. And also from the Frenchman formation and the Oldman formation Alberta. Upper Cretaceous.

Material: Some in the National Museum of Canada, Ottawa; some in the Royal Ontario Museum, Toronto.

Order AMIIFORMES

Family Amiidae

Genus *Amia* Linnaeus 1766

Amia exilis Lambe (C)

1908 *Amia exilis* Lambe, p. 12, pl. 1, figs. 1–6 (c)
1929 *Amia exilis* Lambe: Hay, p. 714
1930 *Amia exites* Lambe: Sternberg in Williams & Dyer, p. 72
1934 *Amia exils* Lambe: Russell, p. 51 (c)
1935 *Amia exils* Lambe: Russell in Fraser *et al.*, p. 128 (name only)

Localities: 1. Bone Coulée (north branch of Frenchman River) and numerous tributary coulées along Fairwell Creek, Cypress Hills, Saskatchewan (T. 7 & 9, R. 21 & 22, W. of 3rd Meridian). Cypress Hills beds. Lower Oligocene.

2. 4 miles above Eastend, Saskatchewan.

Type: National Museum of Canada, Ottawa, no. 6200 a mid-dorsal vertebra from Bone Coulée.

Amia macrospondyla Cope (C)

1891 *Amia macrospondyla* Cope, p. 2, pl. 1, figs. 2, 2a & 2b (c)
1891 *Amia macrospondyla* Ami, p. 53 (name only)
1895 *Amia macrospondyla* Cope: Woodward, p. 372
1902 *Amia macrospondyla* Cope: Hay, p. 381
1905 *Amia macrospondyla* Cope: Lambe, pp. 27, 38, 43
1908 *Amia macrospondyla* Cope: Lambe, p. 12 (c)
1928 *Amia macrospondyla* Cope: Romer & Fryxell, p. 527

1929 *Amia macrospondyla* Cope: Hay, p. 714
1930 *Amia macrospondyla* Cope: Sternberg in Williams & Dyer, p. 72
1934 *Amia macrospondyla* Cope: Russell, p. 51 (c)
1935 *Amia macrospondyla* Cope: Russell in Fraser *et al.*, p. 128 (name only)

Localities: 1. Bone Coulée (North branch of Frenchman River), Cypress Hills, Saskatchewan (T. 7 & 9, R. 21 & 22, W. of 3rd Meridian). Cypress Hills beds. Lower Oligocene.

2. Cypress Hills, Long. 109°, Lat. 49°40′ (Swift Current Creek), District of Assiniboia, Saskatchewan. Cypress Hills beds. Lower Oligocene.

Type: National Museum of Canada, Ottawa, no. 6198 anterior vertebral centrum. From locality (2)

Amia selwyniana Ami (nomen nudum)

1891 *Amia selwyniana* Ami, p. 53 (name only)

Locality: Cypress Hills, Long. 109°, Lat. 49°40′, District of Assiniboia, Saskatchewan. Lower Oligocene.

Amia whiteavesiana Cope (C)

1891 *Amia whiteavesiana* Cope, p. 2, pl. 1, figs. 1, 1a, 1b (c)
1895 *Amia whiteavesiana* Cope: Woodward, p. 372
1902 *Amia whiteavesiana* Cope: Hay, p. 381
1905 *Amia whiteavesiana* Cope: Lambe, pp. 38, 43
1908 *Amia whiteavesiana* Cope: Lambe, p. 12 (c)
1928 *Amia whiteaecsiana* Cope: Romer & Fryxell, p. 527
1929 *Amia whiteavesiana* Cope: Hay, p. 715
1930 *Amia whiteavesiana* Cope: Sternberg in Williams & Dyer, p. 72 (c)
1934 *Amia whiteavesiana* Cope: Russell, p. 51 (c)
1935 *Amia whiteavesiana* Cope: Russell in Fraser *et al.*, p. 128 (name only)

Localities: 1. Bone Coulée (north branch of Frenchman River) and numerous tributary coulées along Fairwell Creek, Cypress Hills, Saskatchewan (T. 7 & 9, R. 21 & 22, W. of 3rd Meridian). Cypress Hills beds. Lower Oligocene.

2. Cypress Hills, Long. 109°, Lat. 49°40′ District of Assiniboia, Saskatchewan. Cypress Hills beds. Lower Oligocene.

Type: National Museum of Canada, Ottawa, no. 6197 anterior vertebral centrum. From locality (2).

Amia sp.

1933 *Amia* ? sp., Russell & Wickenden, p. 58 (c)
1935 *Amia* ? sp., Russell in Fraser *et al.*, p. 128 (c)

Localities: 1. Southeast of Swift Current, southwest Saskatchewan, where the main C.P.R. line crosses Swift River Creek (L. sd. 15, S. 5, T. 15, R. 12, W. of 3rd Meridian). Late Eocene.

2. Swift Current River, Southwest Saskatchewan. Late Eocene (White River beds).

Genus *Kindleia* Jordan 1927

Kindleia fragosa Jordan (C)

1927 *Kindleia fragosa* Jordan, p. 146, fig. 5 (c)
1927 *Pisces*, gen et sp. nov. Russell, pp. 41, 42 (c)
1928 *Kindleia fragosa* Jordan: Jordan, p. 47
1928 *Stylomyleodon lacus* Russell, p. 103, figs. 1–4 (c)
1928 *Stylomyleodon lacus* Russell: Jordan, p. 47
1928b *Stylomyleodon* Russell: Russell, p. 264
1929 *Kindleia fragosa* Jordan: Jordan, p. 271
1929a *Stylomyleodon lacus* Russell: Russell, pp. 163, 166, 167, 169, 170 (c)
1929b *Stylomyleodon lacus* Russell: Russell, p. 369 (c)
1929b *Kindleia fragosa* Jordan: Russell, p. 370
1929 *Stylomyleodon lacus* Russell: Hay, p. 715
1929 *Kindleia fragosa* Jordan: Hay, p. 780
1932 *Kindleia fragosa* Jordan: Russell, p. 128
1932 *Stylomyleodon lacus* Russell: Russell, p. 137
1964 *Kindleia fragosa* Jordan: Estes, p. 29, figs. 15, 16e, 17a (c)

Localities: 1. 150′ below the top of the Edmonton formation, northwest of Rumsey, Alberta (SE ¼ S. 31, T. 34, R. 21, W. of 4th Meridian). From 20′ above the uppermost of the two coal seams (82-P-15). Upper Cretaceous.

2. 1 mile west of Red Deer, Alberta. From the Paskappo beds, on the right bank of the Red Deer River (L.sd. 1, 2, S. 18, T. 38, R. 27. W. of 4th Meridian). Paleocene.

3. From sandstone and shale outcrops on the left bank of the Bow River, southwest of the village of Cochrane, Alberta (L.sd. 7, S. 4, T. 26, R. 4, W. of 4th Meridian). Upper Cretaceous.

4. On a large railway cutting about 1 mile east of Cochrane, Alberta (L. sd. 4, S. 1, T. 26, R. 4, W. of 5th Meridian). Vertebrae occur in a bed of freshwater shells about 55′ above the railway track (83-A). Upper Cretaceous.

5. Erickson's Landing, Alberta. From a large outcrop of sandstone and shale on the left bank of Red Deer River. Vertebrae occur at the west end, uppermost part of this outcrop, 100′ above the river, associated with a shell band and a thin coal seam (S. 23, 24, T. 38, R. 26, W. of 4th Meridian). Upper Cretaceous.

Type: National Museum of Canada, Ottawa, no. 8533, part of lower jaw with tooth sockets, from the Red Deer River, 5 miles west of Scollard. Russell's type of *Stylomyleodon lacus* was from locality 2, and is in the University of Alberta, Geological Museum, Edmonton (no. 131).

Remarks: This genus is very similar to *Amia*.

Kindleia sp. (C)

1932 *Stylomyleodon* sp., Russell, pp. 128, 146 (c)
1935 *Stylomyleodon* sp., Russell, p. 140 (c)

Localities: 1. Willow Creek, Alberta. From the Willow Creek formation. Paleocene.

2. On a rock cutting of the C.P.R., 1 mile east of Milford Siding, Alberta. Bow River formation. Upper Cretaceous.

3. Saunders formation, Alberta. Upper Cretaceous.

Material: L. Russell Collection.

Genus *Protamia* Leidy 1873

Protamia sp.

1924 *Pappichthys* sp., Sternberg, p. 68 (c)
1924 *Pappichthys* sp., Gilmore, p. 27 (c)
1928 *Pappichthys* sp., Russell, p. 107 (c)
1932 *Pappichthys* sp., Russell, p. 146 (c)
1964 cf *Protamia* sp., Estes, p. 42, fig. 20a

Localities: 1. McLeod River, near mouth of the Embarras River, Alberta. Upper Edmonton. Upper Cretaceous (Cenomanian).

2. Near the head of Rocky Creek, on the southern face of Wood Mountain Plateau, Saskatchewan (S. 15, T. 1, R. 5, W. of 3rd Meridian). Lance formation. Upper Cretaceous.

3. Also recorded from the Saunders formation, Paskapoo formation and Oldman formation, Alberta. Upper Cretaceous.

Material: Some in the National Museum of Canada, Ottawa.

Remarks: This genus is very similar to *Amia*.

Division Haleocostomes

Order ASPIDORHYNCHIFORMES

Family Aspidorhynchidae

Genus *Belonostomus* Agassiz 1834

Belonostomus longirostris (Lambe)

1902 *Diphyodus longirostris* Lambe, Osborn, pp. 11, 16 (name only)
1902 *Diphyodus longirostris* Lambe, p. 30, pl. 15, figs. 18, 19 (c)
1905 *Diphyodus longirostris* Lambe: Lambe, pp. 22, 36
1905 *Diphiodus longirostris* Lambe: Lambe, p. 45
1905 *Diphyodus longirostris* Lambe: Stanton & Hatcher, p. 69
1908 *Diphyodus longirostris* Lambe: Cockerell, p. 162
1912 *Diphyodus longirostris* Lambe: Peale, p. 754
1914 *Diphyodus longirostris* Lambe: Brown, p. 378
1915 *Diphyodus longirostris* Lambe: Bowen, pp. 118, 148
1916 *Diphyodus longirostris* Lambe: Matthew, p. 485
1919 *Diphyodus longirostris* Lambe: Cockerell, p. 172
1925b *Diphyodus longirostris* Lambe: Stensiö, p. 9
1927 *Diphyodus longirostris* Lambe: Jordan, p. 145 (c)
1929 *Diphyodus longirostris* Lambe: Hay, p. 694
1930 *Diphyodus longirostris* Lambe: Sternberg in Williams & Dyer, pp. 33, 49
1964 *Belonostomus longirostris* (Lambe) Estes, p. 22, figs. 12, 13, 14

Localities: 1. Red Deer River, Alberta. Oldman formation. Upper Cretaceous (Campanian).

2. 150′ below the top of the Edmonton beds and 20′ above uppermost of two coal seams, SE ¼ S. 31, T. 34, R. 21, W. of 4th Meridian. Northwest of Rumsey, Alberta. Upper Cretaceous (Maestrichtian).

Type: National Museum of Canada, Ottawa, no. 1367, a premaxillary bone from locality (1).

Sub-Class TELEOSTEI

Order CLUPEIFORMES

Sub-order Elopoidei

Family Albulidae

Albulid indet.

Locality: Red Deer River, Alberta. Belly River series. Upper Cretaceous.

Sub-order Salmonoidei

Family Salmonidae

Genus *Salmo* Linnaeus 1758

Salmo salar Linn.

1758 *Salmo salar* Linnaeus, p. 308
1893 *Salmo salar* ? Linn: Dawson, p. 267 (c)
1905 *Salmo salar* ? Linn: Lambe, pp. 37, 44 (c)
1912 *Salmo salar* Linn: Lambe, p. 13 (name only)
1929 *Salmo salar* Linn: Hay, p. 751
1963 *Salmo* ? *salar* Linn: Uyeno & Miller, p. 6

Localities: 1. Goose River, north shore of St. Lawrence River, near Quebec. Pleistocene.

2. Riviere-du-Loup, near Quebec. Pleistocene.

Fossil Material: Redpath Museum, McGill University, Montreal, from the Goose River.

Remarks: Since this is a recent species only the chief fossil references are cited. As a fossil it has so far only been recorded from the Pleistocene of Canada.

Family Osmeridae

Genus *Osmerus* Lacepède 1803

Osmerus mordax (Mitchill)

1815 *Atherina mordax* Mitchill, p. 446
1893 *Osmerus mordax* Gill, Dawson, p. 265 (c)
1901 *Osmerus mordax* (Mitchill) Coleman, p. 224 (c)
1905 *Osmerus mordax* (Mitchill): Lambe, pp. 39, 44
1912 *Osmerus mordax* (Mitchill): Lambe, p. 13 (name only)
1913 *Osmerus mordax* (Mitchill): Cockerell, p. 126
1923 *Osmerus mordax* (Mitchill): Hay, p. 287 (name only)
1929 *Osmerus mordax* (Mitchill): Hay, p. 753

Locality: Green's Creek, near Ottawa, Ontario. In nodules in the Leda clay, near H.W.M. Also found strewn along the shore of the Ottawa River for two miles to the east of Green's Creek. Leda clay. Pleistocene.

Fossil Material: National Museum of Canada, Ottawa; Redpath Museum, McGill University, Montreal. From Green's Creek.

Remarks: Since this species is a widely distributed recent form the bibliography is a selected one. In the fossil state this species has so far only been recorded from concretionary nodules of Pleistocene age from Canada.

Genus *Mallotus* Cuvier 1829

Mallotus villosus (Müller)

1776 *Clupea villosa*, Müller, Zool. Dan. Prodr. p. 50
1838 *Mallotus villosus* (Cuvier) Agassiz, *5*, 2, p. 98, pl. 60
1844 *Mallotus villosus* (Cuvier): Mantell, p. 670
1847 *Mallotus villosus*—Logan, p. 71 (c)
1848a *Mallotus villosus* (Cuvier): Agassiz, p. 42
1848 *Mallotus villosus* (Cuvier): Cuvier & Valenciennes, *21*, p. 392, pls. 622, 623
1848 *Mallotus villosus* (Cuvier): Gould, p. 64, figs. 36–39
1849 *Mallotus villosus* (Cuvier): Bronn, p. 672
1852 *Mallotus villosus*—Murray, p. 77 (c)
1856 *Mallotus villosus* (Cuvier): Billings, pp. 337, 345 (c)
1856a *Mallotus villosus* (Cuvier): Leidy, p. 90
1857 *Mallotus villosus* (Cuvier): Dawson, p. 415 (c)
1863 *Mallotus villosus* (Cuvier): Dawson, pp. 916, 965, fig. 494
1870 *Mallotus villus* (Cuvier): Richardson, p. 310 (c)
1872 *Mallotus villosus* (Cuvier): Dawson, p. 402
1872a *Mallotus villosus* (Cuvier): Dawson, pp. 57, 98 (c)
1882 *Mallotus villosus* (Cuvier): Jordan & Gilbert, p. 291
1888 *Mallotus villosus* (Cuvier): Chapman, p. 291 (c)
1893 *Mallotus villosus* (Cuvier): Dawson, p. 265, pl. 7, fig. 1 (c)
1895 *Mallotus villosus* (Cuvier): Scudder, p. 39
1897 *Mallotus villosus* (Cuvier): Ami, pp. 21–23 (c)
1901 *Mallotus* sp., Ells, p. 17G (c)
1901 *Mallotus villosus* (Cuvier): Ami, pp. 53, 54G (name only)
1901 *Mallotus villosus* (Müller) Woodward, p. 161
1901 *Mallotus villosus* (Cuvier): Coleman, p. 224 (c)
1901a *Mallotus villosus* (Cuvier): Coleman, p. 131 (c)
1902 *Mallotus villosus* (Müller): Hay, p. 392
1905 *Mallotus villosus* (Müller): Lambe, pp. 39, 44
1907 *Mallotus villosus* (Cuvier): Ells, pp. 52, 71 (c)
1908 *Mallotus villosus* (Cuvier): Clapp, p. 522
1911 *Mallotus villosus* (Müller): Haug, p. 187B
1912 *Mallotus villosus* (Müller): Lambe, p. 13 (name only)
1913 *Mallotus villosus* (Müller): Deecke, p. 84
1913 *Mallotus villosus* (Müller): Wiman, p. 153
1914b *Mallotus villosus* (Müller): Lambe, p. 298

1915 *Mallotus villosus* (Müller): Fraser, p. 116, pl. 10 (c)
1916 *Mallotus villosus* (Müller): Meek, p. 138
1917 *"Mallotus"*—Johnson, p. 25 (c)
1920 *Mallotus villosus* (Müller): Baker, p. 182
1923 *Mallotus villosus* (Müller): Hay, p. 287 (name only)
1925 *Mallotus villosus* (Müller): Bolkay, p. 1
1927 *Mallotus villosus* (Müller): Hay, p. 283
1929 *Mallotus villosus* (Müller): Hay, p. 753
1961 *Mallotus villosus* (Müller): Gadd, pp. 5, 11

Localities: 1. Green's Creek, near Ottawa, Ontario. In nodules in the Leda clay, near H.W.M. Also found strewn along the shore of the Ottawa River for two miles to the east of Green's Creek. Leda clay. Pleistocene.

2. Besserer's Grove, on the shore of the Ottawa River, Ontario. Leda clay. Pleistocene.

3. From a creek near the bridge at Cyrville, County of Carleton, Ontario. Leda clay. Pleistocene.

4. Flat Rapids, Madawaska River, County of Renfrew, Ontario. Pleistocene.

5. Lake Chaudiere, 183′ above the H.W.M., and Fort Coulonge, 365′ above the H.W.M. Ontario. Pleistocene.

6. Portneuf River, Quebec. Pleistocene.

Fossil Material: National Museum of Canada, Ottawa, the Royal Ontario Museum, Toronto, and the British Museum (Natural History).

Remarks: Since this species is a widely distributed recent form the bibliography is a selected one. However in the fossil state it has so far only been recorded from concretionary nodules of Pleistocene age from Canada, Greenland and Yugoslavia (Bolkay 1925:1). In Greenland these nodules have from time to time been split open along the plane of the contained fish by the Eskimo and subsequently used as scrapers.

Sub-order Clupeoidei

Family Ichthyodectidae

Genus *Ichthyodectes* Cope 1871

Ichthyodectes sp.

Locality: Near Vermillion River Town on the Rolling River, Manitoba (T. 25, R. 20, W. of 3rd Meridian). Vermillion River formation.

Material: National Museum of Canada, Ottawa (Labelled *Gillicus*).

Genus *Portheus* Cope 1872

Portheus sp.

Locality: Badheart Creek, Alberta. Wapiabi formation (Santonian).

Material: Royal Ontario Museum, Toronto, and National Museum of Canada, Ottawa.

Family Chirocentridae

Genus *Cladocyclus* Agassiz 1841

Cladocyclus occidentalis Leidy

1873 *Cladocyclus occidentalis* Leidy, p. 288, pl. 17, figs. 21, 22, pl. 30, fig. 5
1889c *Cladocyclus occidentalis* Leidy: Whiteaves, p. 195, pl. 26, figs. 8, 9 (c)
1892 *Cladocyclus occidentalis* Leidy: Tyrrell, pp. 108, 112, 211E (c)
1892 *Cladocyclus occidentalis* Leidy: Rüst, p. 102 (c)
1900 *Ichthyodectes arcuatus* Cope: Loomis, p. 242
1902 *Cladocyclus occidentalis* Leidy: Hay, p. 399
1909 *Cladocyclus occidentalis* Leidy: Dowling, p. 25 (c)
1919 *Cladocyclus occidentalis* Leidy: Cockerell, p. 177
1929 *Cladocyclus occidentalis* Leidy: Hay, p. 739

Localities: 1. Ochre River, T. 23, R. 17 W.
2. Edwards Creek, T. 23, R. 19 W.
3. Vermillion River, T. 25, R. 20 W.
4. Rolling River, 2 miles above old C.P.R. crossing.
5. Favell River, T. 35, T. 26 W.
6. Thunder Hill, T. 35, R. 30 W.

All from the Niobrara group, Manitoba. Late Cretaceous.

Type: Academy of Sciences, Philadelphia and the National Museum, Washington, scales from Sage Creek, Dakota.

Sub-order Enchodontoidei

Family Enchodontidae

Genus *Cimolichthys* Leidy 1857

Cimolichthys sp.

1916a *Cimolichthys* sp., Lambe, p. 196 (c)

Locality: Railway cutting in the northwest corner of S. 15, T. 6, R. 8, W. of 1st Meridian, Manitoba. Base of Pierre. Upper Cretaceous.

Material: Fragments of jaw and vertebrae, National Museum of Canada, Ottawa, from the Upper Cretaceous of the above locality.

Genus *Enchodus* Agassiz 1835

Enchodus schumardi Agassiz

1856 *Enchodus schumardi* Leidy, p. 257
1873 *Enchodus shumardi* Leidy: Leidy, p. 289, pl. 17, fig. 20
1889b *Enchodus shumardi* Leidy: Whiteaves, p. 194, pl. 26, figs. 7, 7a–c (c)
1892 *Enchodus shumardi* Leidy: Tyrrell, pp. 112E, 211E (c)
1892 *Enchodus shumardi* Leidy: Rüst, p. 102 (c)
1900 *Enchodus schumardi* Leidy: Loomis, p. 280, pl. 27, figs. 18, 19
1901 *Enchodus shumardi* Leidy: Woodward, p. 205
1902 *Enchodus shumardii* Leidy: Hay, p. 389
1905 *Enchodus shumardi* Leidy: Lambe, pp. 21, 36, 44
1907 *Enchodus shumardi* Leidy: Merrill, p. 11
1908 *Enchodus shumardi* Leidy: McInnes, p. 45
1909 *Enchodus shumardi* Leidy: Dowling, p. 25 (c)

1913 *Enchodus shumardi* Leidy: McInnes, p. 67 (c)
1913 *Enchodus shumardi* Leidy: Green, pp. 71, 82, 104, pl. 15, figs. 1–13
1929 *Enchodus shumardi* Leidy: Hay, p. 748

Localities: 1. Rolling River, 2 miles below old C.P.R. crossing, Manitoba. Niobrara group. Cretaceous.

2. Deloraine, Manitoba. Cretaceous.

3. Pasquia Hills, Manitoba. Cretaceous.

Type: Dentary bone, National Museum, Washington, from Sage Creek, Dakota. Cretaceous.

Canadian Material: National Museum of Canada, Ottawa, no. 5073, from the Rolling River

Order OSTEOGLOSSIFORMES

Sub-order Notopteroidei

Family Hiodontidae

Genus *Eohiodon* Cavender 1965

Eohiodon rosei (Hussakof) (C)

1916 *Leuciscus rosei* Hussakof, p. 18, fig. 1 (c)
1929 *Richardsonius rosei* (Hussakof) Hay, p. 724
1959 *Leuciscus rosei* Hussakof: Miller, p. 203
1963 *Leuciscus rosei* Hussakof: Uyeno & Miller, p. 13
1964 *Eohiodon rosei* (Hussakof) Cavender, p. 1

Locality: Red Point, Kamloops Lake, British Columbia. Tranquille beds. Middle Eocene (Cockfield, 1948; Rouse & Mathews, 1961).

Type: National Museum of Canada, Ottawa, nos. 2156, 2156a, a nearly complete fish in counterpart, from Kamloops Lake.

Order BERYCIFORMES

Berycoid scales

Locality: Lille, Crow's Nest Pass, Alberta. Dakota formation. Cretaceous.

Material: British Museum (Natural History).

Order PERCIFORMES

Sub-order Percoidei

Family Sciaenidae

Genus *Platacodon* Marsh 1889

Platacodon sp.

1924 *Platacodon* sp., Sternberg, p. 68 (c)
1924 *Platacodon* sp., Gilmore, p. 27 (c)
1924a *Platacodon* sp., Gilmore, p. 68

Locality: Near the head of Rocky Creek, on the southern face of Wood Mountain Plateau, Saskatchewan (S. 15, T. 1, R. 5, W. of 3rd Meridian). Lance formation. Upper Cretaceous.

Material: Some in the National Museum of Canada, Ottawa.

Remarks: This material probably belongs to *Platacodon nanus* Marsh which has also been recorded from the Lance formation of Wyoming (Estes, 1964).

Family Priscarcaridae

Priscarcaridae indet.

1930 Priscarcaridae gen. et sp. nov., Sternberg (in Williams & Dyer), p. 49 (c)

Locality: Edmonton formation, Alberta. Upper Cretaceous.
Remarks: No description given.

Sub-order Cottoidei

Family Cottidae

Genus *Artediellus* Jordan 1855

Artediellus atlanticus Jordan & Evermann (C)

1857 "*Cottus*", Dawson, p. 415 (c)
1863 "*Cottus*" sp., Dawson, p. 917 (c)
1893 *Cottus* (*Centrodermichthys*) *uncinatus* Reinhart: Dawson, p. 265 (c)
1897 *Cottus* sp., Ami, p. 23 (c)
1897 *Cottus uncinatus* Reinhart: Ami, p. 22
1901 *Cottus* sp., Ells, p. 17G
1901 *Cottus uncinatus* Reinhart: Woodward, p. 585
1901 *Cottus* sp., Ami, p. 54G
1901 *Cottus uncinatus* Reinhart: Coleman, p. 224 (c)
1902 *Artediellus atlanticus* Jordan & Evermann: Hay, p. 407
1905 *Artediellus uncinatus* (Reinhart): Lambe, pp. 39, 44
1905 *Cottus uncinatus* Reinhart: Leriche, p. 677
1912 *Artediellus uncinatus* (Reinhart): Lambe, p. 13 (name only)
1916 *Artediellus uncinatus* (Reinhart): Meek, p. 354
1917 "*Cottus*", Johnson, p. 25 (c)
1923 *Artediellus atlanticus* (*Cottus uncinatus*) Jordan & Evermann: Hay, p. 287
1929 *Artediellus atlanticus* Jordan & Evermann: Hay, p. 794

Localities: Green's Creek, near high water mark, and along the Ottawa River for about two miles east of Green's Creek, Ottawa, Ontario. In nodules in the Leda clay, Pleistocene.

Fossil Material: Dawson and Stewart Collections, Redpath Museum, McGill University, Montreal.

Remarks: This is a recent fish and the only known fossil examples of the species are contained in concretionary nodules from the Leda clay at Ottawa. The references given are chiefly those that refer directly to the fossil material.

Family Cyclopteridae

Genus *Cyclopterus* Linnaeus 1758

Cyclopterus lumpus Linn. (C)

1852 *Cyclopterus lumpus* Linn: Murray, p. 77 (c)
1856 *Cyclopterus lumpus* Linn: Billings, pp. 337, 345 (c)
1856a *Cyclopterus lumpus* Linn: Leidy, p. 90
1857 *Cyclopterus lumpus* Linn: Dawson, p. 415 (c)
1863 *Cyclopterus lumpus* Linn: Dawson, p. 917 (c)
1872 *Cyclopterus lumpus* Linn: Dawson, p. 403
1872a *Cyclopterus lumpus* Linn: Dawson, pp. 57, 99
1882 *Cyclopterus lumpus* Linn: Jordan & Gilbert, p. 747
1888 *Cyclopterus lumpus* Linn: Chapman, p. 291
1893 *Cyclopterus lumpus* Linn: Dawson, pp. 203, 267
1897 *Cyclopterus lumpus* Linn: Ami, p. 23
1901 *Cyclopterus lumpus* Linn: Ami, p. 54 G
1901 *Cyclopterus lumpus* Linn: Coleman, p. 224 (c)
1901 *Cyclopterus lumpus* Linn: Woodward, p. 587
1902 *Cyclopterus lumpus* Linn: Hay, p. 407
1905 *Cyclopterus lumpus* Linn: Lambe, pp. 39, 44
1911 *Cyclopterus lumpus* Linn: Haug, p. 1876
1912 *Cyclopterus lumpus* Linn: Lambe, p. 13 (name only)
1917 *Cyclopterus* sp., Johnston, p. 2
1923 *Cyclopterus lumpus* Linn: Hay, pp. 23, 287 (name only)
1929 *Cyclopterus lumpus* Linn: Hay, p. 795

Locality: Green's Creek, near Ottawa, Ontario. From nodular masses in the Leda clay about the mouth of Green's Creek in Gloucester, and along the shore of the Ottawa River for two miles east of Green's Creek. Pleistocene.

Fossil Material: In the National Museum of Canada, Ottawa, and in the Royal Ontario Museum, Toronto, from the Pleistocene of Green's Creek.

Remarks: Since this species is a widely distributed recent form the bibliography is a selected one. However in the fossil state it has so far only been recorded from the Pleistocene of Canada.

Order OSTARIOPHYSI

Sub-order Siluroidei

Family Diplomystidae

Genus *Rhineastes* Cope 1872

Rhineastes rhaeas Cope (C)

1891 *Rhineastes rhaeas* Cope, Ami, p. 53 (c)
1891 *Rhineastes rhaeas* Cope, p. 3, pl. 1, figs. 3, 3a, 3b (c)
1901 *Rhineastes* (?) *rhaeas* Cope: Woodward, p. 329
1902 *Rhineastes rhaeas* Cope: Hay, p. 382
1905 *Rhineastes rhaeas* Cope: Lambe, pp. 37, 38, 44
1908 *Rhineastes rhaeas* Cope: Lambe, pp. 9, 14, pl. 1, figs. 10–16 (c)
1929 *Rhineastes rhaeas* Cope: Hay, p. 777
1930 *Rhineastes rhaeas* Cope: Sternberg (in Williams & Dyer), p. 72 (c)
1934 *Rhineastes rhaeas* Cope: Russell, p. 51 (c)

1935 *Rhineastes rhaeas* Cope: Russell (in Fraser *et al.*), p. 128 (name only)

Locality: Bone Coulée (north branch of the Frenchman River) and numerous tributary coulées along Fairwell Creek, Saskatchewan (T. 7, and 9, R. 21 and 22, W. of 3rd Meridian). Cypress Hills beds. Lower Oligocene. The type locality was given as Cypress Hills, Long. 109° Lat. 49° 40′ (Swift River Creek), district of Assiniboia, Saskatchewan.

Type: National Museum of Canada, Ottawa, no. 6209, a median abdominal vertebra from the headwaters of Swift Current Creek, Saskatchewan.

? *Rhineastes* sp.

1891 ? Rhineastes sp., Cope, p. 4 (c)
1905 ? Rhineastes sp., Cope, Lambe, pp. 38, 44 (c)

Locality: Cypress Hills, Assiniboia District, Saskatchewan. Lower Oligocene.

Family Ictaluridae

Genus *Ictalurus* Rafinesque 1820

Ictalurus cancellatus (Cope) (C)

1891 *Amiurus cancellatus* Cope, p. 3, pl. 1, figs. 4, 4a, 4b, 5, 5a, 5b (c)
1891 *Amiurus cancellatus* Ami, p. 53 (name only)
1901 *Amiurus cancellatus* Cope: Woodward, p. 328
1902 *Ameiurus cancellatus* Cope: Hay, p. 383
1905 *Amiurus cancellatus* Cope: Lambe, pp. 27, 38, 44
1908 *Amiurus cancellatus* Cope: Lambe, pp. 9, 15 (c)
1929 *Ameiurus cancellatus* Cope: Hay, p. 728
1934 *Amiurus cancellatus* Cope: Russell, p. 51 (c)
1935 *Amiurus cancellatus* Cope: Russell in Fraser *et al.*, p. 128 (name only)

Localities: 1. Bone Coulée (north branch of Frenchman River), Cypress Hills, Saskatchewan (T. 7 & 9, R. 21 & 22, W. of 3rd Meridian). Cypress Hills beds, Lower Oligocene.

2. Cypress Hills, Long. 109°, Lat. 49° 40′ (Swift Current Creek), District of Assiniboia, Saskatchewan. Cypress Hills beds, Lower Oligocene.

Types: National Museum of Canada, Ottawa, syntypes nos. 6218 and 6219, vertebral centra. From locality (2).

Ictalurus maconnellii (Cope) (C)

1891 *Amiurus maconnellii* Cope, p. 4, figs. 6, 6a, 6b, 7a, 7b (c)
1891 *Amiurus maconnellii* Ami, p. 53 (name only)
1901 *Amiurus maconnelli* Cope: Woodward, p. 328
1902 *Ameiurus maconnellii* Cope: Hay, p. 383
1905 *Amiurus maconnellii* Cope: Lambe, pp. 27, 38, 44
1908 *Amiurus maconnellii* Cope: Lambe, pp. 9, 16 (c)
1930 *Amiurus maconnelli* Cope: Sternberg in Williams & Dyer, p. 72 (c)

1929 *Ameiurus maconnellii* Cope: Hay, p. 728
1934 *Amiurus maconnellii* Cope: Russell, p. 51 (c)
1935 *Amiurus maconnellii* Cope: Russell in Fraser *et al.*, p. 128 (name only)

Localities: 1. Bone Coulée (north branch of Frenchman River), Cypress Hills, Saskatchewan (T. 7 & 9, R. 21 & 22, W. of 3rd Meridian). Cypress Hills beds, Lower Oligocene.

2. Cypress Hills Long. 109°, Lat. 49° 40′, District of Assiniboia (Swift Current Creek), Saskatchewan. Cypress Hills beds, Lower Oligocene.

Type: National Museum of Canada, Ottawa, no. 6221 a portion of centrum from Swift Current Creek.

Sub-order Cyprinoidei

Family Catostomidae

Genus *Amyzon* Cope 1872

Amyzon brevipinne Cope (C)

1894 *Amyzon brevipinne* Cope, p. 402 (c)
1901 *Amyzon brevipinne* Cope: Woodward, p. 300
1902 *Amyzon brevipinne* Cope: Hay, p. 395
1905 *Amyzon brevipinne* Cope: Lambe, pp. 30, 39, 44
1906 *Amyzon brevipinne* Cope: Lambe, p. 151, pl. 1, figs. 1, 2 (c)
1906a *Amyzon brevipinne* Cope: Lambe, p. 174
1906b *Amyzon brevipinne* Cope: Lambe, p. 137
1908 *Amyzon brevipinne* Cope: Penhallow, p. 144 (c)
1917 *Amyzon brevipinne* Cope: Eastman, p. 292, pl. 19, figs. 1, 2
1929 *Amyzon brevipinne* Cope: Hay, p. 721
1963 *Amyzon ? brevipinnis* Cope: Uyeno & Miller, p. 7

Locality: North fork of the Similkimeen River (Horse Fly River), British Columbia. Oligocene.

Type: National Museum of Canada, Ottawa, no. 6189, from the north fork of the Similkimeen River.

Remarks: Eastman (1917) doubtfully records this species from the Miocene of Washington.

Amyzon commune Cope

1874 *Amyzon commune* Cope, p. 50
1884 *Amyzon commune* Cope: Cope, p. 749, pl. 5, fig. 21
1901 *Amyzon commune* Cope: Woodward, p. 300
1902 *Amyzon commune* Cope: Hay, p. 395
1906 *Amyzon commune* Cope: Lambe, p. 151, pl. 1, fig. 3
1906a *Amyzon commune* Cope: Lambe, p. 137
1907 *Amyzon commune* Cope: Merrill, p. 6
1908 *Amyzon commune* Cope: Cockerell, p. 164
1908 *Amyzon commune* Cope: Penhallow, p. 144 (c)
1929 *Amyzon commune* Cope: Hay, p. 721

Locality: Horse Fly River, British Columbia. Oligocene.

Type: National Museum, Washington, nearly complete fish from the Lower Tertiary, South Park, Colorado.

Amyzon sp.

1895 *Amyzon* sp., Dawson, p. 76B (c)
1905 *Amyzon* sp., Lambe, pp. 39, 44 (c)
1908 *Amyzon* sp., Penhallow, p. 23 (c)

Localities: 1. Horse Fly River, British Columbia. Oligocene.

2. Similkimeen valley near Tulameen River, British Columbia. Oligocene (Coldwater group).

Family Cyprinidae

Genus *Pimephales* Rafinesque 1820

Pimephales promelas Rafinesque

1958 *Pimephales promelas* Rafinesque: Smith, p. 177, text-fig. 1
1963 *Pimephales promelas* Rafinesque: Uyeno & Miller, p. 7 (c)

Locality: Lillestrom, 16 miles southwest of Moose Jaw, and just north of Johnstone Lake, Saskatchewan. Wisconsin glacial (10,000). Pleistocene.

Remarks: This is a recent fish widely distributed throughout North America. It is commonly called the flat head minnow and has been recorded as a fossil both from America (Smith, 1958) and Canada (Uyeno & Miller, 1963).

Order GASTEROSTEIFORMES

Family Gasterosteidae

Genus *Gasterosteus* Linnaeus 1758

Gasterosteus aculeatus Linn.

1872 *Gasterosteus aculeatus* Linn: Dawson, pp. 57, 99 (c)
1893 *Gasterosteus aculeatus* ? Linn: Dawson, pp. 203, 267 (c)
1901 *Gasterosteus* sp. Ami, p. 54G (name only)
1901 *Gasterosteus aculeatus* Linn: Colman, p. 224 (c)
1905 *Gasterosteus bispinosus* Walbaum: Lambe, pp. 39, 44
1909 *Gasterosteus aculeatus* Linn: Regan, p. 435
1912 *Gasterosteus bispinosus* Walbaum: Lambe, p. 13 (name only)
1917 *Gasterosteus* sp. Johnston, p. 2
1920 *Gasterosteus aculeatus* Linn: Roth, p. 513
1923 *Gasterosteus aculeatus* Linn: Hay, p. 287 (name only)
1929 *Gasterosteus bispinosus* Walbaum: Hay, p. 766
1961 *Gasterosteus aculeatus* Linn: Coope *et al.*, p. 409
1963 *Gasterosteus aculeatus* Linn: Uyeno & Miller, p. 9 (c)

Locality: Green's Creek, near Ottawa, Ontario. From the Leda clay. Pleistocene.

Fossil material: Dawson Collection, Redpath Museum, McGill University, Montreal, from Green's Creek.

Remarks: Since this species is a widely distributed recent form, the

bibliography is limited to fossil references only. So far this species has only been recorded as a fossil from Canada and from Upton Warren, Worcestershire, England (Coope *et al.*, 1961).

Class Sarcopterygii

Sub-Class CROSSOPTERYGII

Order OSTEOLEPIFORMES

Family Osteolepididae

Genus *Eusthenopteron* Whiteaves 1881

Eusthenopteron foordi Whiteaves (C)

1881b *Eusthenopteron foordi* Whiteaves, p. 495 (c)
1881c *Eusthenopteron foordi* Whiteaves, p. 31 and woodcut (c)
1883 *Eusthenopteron foordi* Whiteaves: Ells, p. 10D
1883 *Eusthenopteron foordi* Whiteaves: Claypole, p. 278
1889a *Eusthenopteron foordi* Whiteaves: Whiteaves, p. 78, pl. 5, fig. 5, pls. 6, 7
1889a *Phaneropleuron curtum* Whiteaves, p. 91, pl. 10, fig. 1 (inadvertently)
1890 *Eusthenopteron foordi* Whiteaves: Traquair, p. 17
1891 *Eusthenopteron foordi* Whiteaves: Woodward, p. 362
1893b *Eusthenopteron foordi* Whiteaves: Traquair, p. 266
1898 *Eusthenopteron foordi* Whiteaves: Woodward, p. 25, figs. 25, 58
1902 *Eusthenopteron foordi* Whiteaves: Hay, p. 361
1902 *Eusthenopteron foordi* Whiteaves: Goodrich, p. 311, pl. 16, figs, A, F
1904 *Eusthenopteron foordi* Whiteaves: Bridge, p. 479, fig. 276
1905 *Eusthenopteron foordi* Whiteaves: Lambe, pp. 14, 34, 43
1907 *Eusthenopteron foordi* Whiteaves: Whiteaves, p. 254 (c)
1907 *Eusthenopteron foordi* Whiteaves: Eastman, p. 17
1908 *Eusthenopteron foordi* Whiteaves: Eastman, p. 280
1909 *Eusthenopteron foordi* Whiteaves: Goodrich, p. 275
1909 *Eusthenopteron foordi* Whiteaves: Jaekel, p. 719, fig. 11
1911 *Eusthenopteron foordi* Whiteaves: Oswald, p. 407, fig. 8
1911 *Eusthenopteron foordi* Whiteaves: Jaekel, p. 76, fig. 18
1912 *Eusthenopteron foordi* Whiteaves: Patten, p. 391, fig. 4
1912 *Eusthenopteron foordi* Whiteaves: Lambe, p. 5 (name only)
1912 *Eusthenopteron foordi* Whiteaves: Hussakof, p. 131, fig. 2
1913 *Eusthenopteron foordi* Whiteaves: Clarke, p. 113 (c)
1913 *Eusthenopteron foordi* Whiteaves: Watson, p. 25, fig. 162
1913 *Eusthenopteron foordi* Whiteaves: Broom, p. 460, fig. 1
1913 *Eusthenopteron foordi* Whiteaves: Moodie, p. 255
1913 *Eusthenopteron foordi* Whiteaves: Schmalhausen, p. 54
1915 *Eusthenopteron foordi* Whiteaves: Gregory, p. 359, figs. 8, 11C
1918 *Eusthenopteron foordi* Whiteaves: Hussakof & Bryant, p. 176, pl. 70, fig. 2
1918 *Eusthenopteron foordi* Whiteaves: Petronievics, p. 471, figs. 1, 2

1919 *Eusthenopteron foordi* Whiteaves: Bryant, p. 1, pls. 1–18, figs. 1–8
1919 *Eusthenopteron foordi* Whiteaves: Abel, p. 166, fig. 124
1921 *Eusthenopteron foordi* Whiteaves: Stensiö, p. 133, fig. 57
1921 *Eusthenopteron*—Watson, p. 334
1922 *Eusthenopteron fordi* Whiteaves: Stensiö, p. 1249, fig. 4
1922 *Eusthenopteron foordi* Whiteaves: Woodward, p. 30, fig. 2
1922 *Eusthenopteron fordii* Whiteaves: Pehrson, p. 55, fig. 22
1922 *Eusthenopteron foordi* Whiteaves: Gregory, p. 535, figs. 3–5
1922 *Eusthenopteron foordi* Whiteaves: Woodward, p. 29, fig. 2
1922 *Eusthenopteron foordi* Whiteaves: Broom, p. 459, fig. 7
1924 *Eusthenopteron foordi* Whiteaves: Rogers, p. 546
1925 *Eusthenopteron foordii* Whiteaves: Stensiö, p. 2, fig. 1
1929 *Eusthenopteron foordi* Whiteaves: Jaekel, text-fig. 100
1929 *Eusthenopteron foordi* Whiteaves: Hay, p. 677
1931 *Eusthenopteron foordi* Whiteaves: Aldinger, p. 300, figs. 1–4
1932 *Eusthenopteron foordi* Whiteaves: Save-Söderbergh, p. 95, text-fig. 19
1933 *Eusthenopteron* ? *foordi* Whiteaves: Save-Söderbergh, p. 108, pls. 15, 16
1933 *Eusthenopteron*—Holmgren, p. 199, text-fig. 18
1935 *Eusthenopteron foordi* Whiteaves: Alcock, p. 88 (c)
1935 *Eusthenopteron foordi* Whiteaves: Graham-Smith, p. 473 (c)
1935 *Eusthenopteron foordi* Whiteaves: Gregory, p. 197, text-fig. 3
1936 *Eusthenopteron foordi* Whiteaves: Graham-Smith, p. 598, fig. 17
1937 *Eusthenopteron foordi* Whiteaves: Jarvik, p. 65, text-figs. 1B, 3B
1937 *Eusthenopteron foordi* Whiteaves: Westoll, p. 510, text-figs. 2a, b, 3, 4
1939 *Eusthenopteron foordi* Whiteaves: Gregory *et al.*, p. 126, fig. 4
1941 *Eusthenopteron foordi* Whiteaves: Gregory & Raven, p. 293, figs. 9–15, pls. 1–3
1941a *Eusthenopteron foordi* Whiteaves: Gregory & Raven, p. 146, fig. 1
1941b *Eusthenopteron foordi* Whiteaves: Sternberg, p. 3, figs. 1–8
1942 *Eusthenopteron foordi* Whiteaves: Romer, p. 217
1943 *Eusthenopteron foordi* Whiteaves: Westoll, p. 394, fig. 1
1944a *Eusthenopteron foordi* Whiteaves: Jarvik, p. 1, figs. 2–7, 9b
1944 *Eusthenopteron foordi* Whiteaves: Jarvik, p. 1, figs. 1–18
1947 *Eusthenopteron foordi* Whiteaves: Stensiö, p. 83, fig. 22
1952 *Eusthenopteron foordi* Whiteaves: Jarvik, p. 59, fig. 25b
1952 *Eusthenopteron foordi* Whiteaves: Denison, p. 164
1954 *Eusthenopteron foordi* Whiteaves: Jarvik, p. 1, figs. 1, 5b, 6–10, 11a, 14, 16–18, 21–26, 30e, 47
1957 *Eusthenopteron foordi* Whiteaves: Ørvig, p. 372, fig. 1L
1960 *Eusthenopteron foordi* Whiteaves: Jarvik, p. 42, fig. 12A

Locality: Maguasha West, on the southwest side of the Gaspé Peninsula, on the shore of Escuminac Bay, Quebec. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Types: National Museum of Canada, Ottawa, syntypes nos. 4410 (originally 4329) and 4411 from Maguasha West.

Remarks: The wealth of literature on this species is so great that after 1930 only a selected series of references is given.

Genus *Osteolepis* Valenciennes 1829

Osteolepis sp.

1915 *Osteolepis* sp., Kiaer, p. 48 (c)
1957 Osteolepidae, gen. et sp. indet., Ørvig, p. 377

Locality: From the Fish horizon, Skrap Valley, Ellesmere Island, Northwest Territories, Okse Bay formation (sandstone series D of Kiaer, 1915). Lower, Upper Devonian.

Material: Palaeontological Museum, Oslo.

Genus *Megalichthys* Agassiz 1843

Megalichthys hibberti Agassiz

1835 *Ichthyolithus clackmannensis* Flemming, p. 314, pl. 4, figs. 1–3
1839 *Megalichthys hibberti* Agassiz, *2*, 2, p. 90, pls. 63, 63a, 64
1881c *Psammodus bretonensis* Whiteaves, p. 159 (c)
1881e *Psammodus bretonensis* Whiteaves, p. 36 (c)
1881f *Psammodus bretonensis* Whiteaves, p. 94 (c)
1881 *Psammodus* sp., Fletcher, p. 63F (c)
1905 *Parabatrachus maxillaris* (Agassiz) Lambe, pp. 19, 34, 43 (c)
1964 *Megalichthys hibberti* Agassiz: Thomson, p. 302

Locality: The east bank of Scott Brook, 9–10 miles north of St. Peters, Richmond County, Cape Breton Island, Nova Scotia. Coal Measures.

Type: The type of *Ichthyolithus clackmannensis* Flemming is in the Royal Scottish Museum, no. 1950.38.58. The type of *Megalichthys hibberti* is in the B.M.N.H. no. P. 42516, and comes from the Carboniferous of Yorkshire (see Thomson, 1964). The type of *Psammodus bretonensis* Whiteaves from Scott Brook, is in the National Museum of Canada, Ottawa.

Remarks: The status of the type of this species is very confusing. On grounds of priority it should be *Megalichthys clackmannensis* (Flemming); however Thomson (1964) has gone a long way to clear up the mess and has applied to the Commission on Zoological Nomenclature to stabilize the *status quo* of Woodward's "catalogue" (Vol. 2, 1891) on the subject and has proposed the "Leeds head" (B.M.N.H. no. P. 42516) be adopted as the lectotype of *Megalichthys hibberti* Agassiz 1843. Again the literature on this species is considerable and confusing and only the salient references are given here.

Genus *Rhizodus* Owen 1840

Rhizodus hardingi Dawson (C)

1868 *Rhizodus hardingi* Dawson, p. 254, fig. 77, a–d (c)
1890 *Strepsodus*—Woodward, p. 457
1891 *Strepsodus hardingi* (Dawson): Woodward, p. 353
1900 *Strepsodus hardingi* (Dawson): Hay, p. 111
1902 *Strepsodus hardingi* (Dawson): Hay, p. 360
1905 *Strepsodus hardingi* (Dawson): Lambe, pp. 18, 34, 43

1909a *Rhizodus hardingi* Dawson: Lambe, p. 177 (c)
1929 *Strepsodus hardingi* (Dawson): Hay, p. 676

Localities: Horton Bluff and Pictou, Nova Scotia. Coal Measures.

Type: Dawson Collection, Redpath Museum, McGill University, Montreal, fragment of mandible and tooth.

Rhizodus lancifer Newberry

1856 *Rhizodus lancifer* Newberry, pp. 96, 99
1863a *Rhizodus lancifer* Newberry: Dawson, p. 430
1868 *Rhizodus lancifer* ? Newberry: Dawson, pp. 210, 216, fig. 56a, b (c)
1873 *Rhizodus lancifer* Newberry: Newberry, p. 342, pl. 39
1884 *Rhizodus lancifer* Newberry: Fletcher, p. 71H (c)
1891 *Rhizodus lancifer* Newberry: Woodward, p. 348
1900 *Strepsodus dawsoni* Hay, p. 114 (c)
1902 *Strepsodus dawsoni* Hay: Hay, p. 360
1902 *Megalichthys lancifer* (Newberry) Hay, p. 360
1903a *Rhizodus lancifer* Newberry: Whiteaves, p. 29M (c)
1905 *Rhizodus lancifer* ? Newberry: Lambe, pp. 19, 35, 43
1929 *Strepsodus dawsoni* Hay: Hay, p. 676
1929 *Megalichthys lancifer* Newberry: Hay, p. 676

Localities: 1. Horton Bluff and Pictou, Nova Scotia. Coal Measures.

2. Near Dorchester, Nova Scotia. Coal Measures.

Type: Location of the type unknown to author (not in the A.M.N.H. or the U.S. National Museum), a lower jaw from the Coal Measures of Linton, Ohio.

Canadian Material: Redpath Museum, McGill University, Montreal, from Pictou.

Remarks: For a discussion on the genera *Megalichthys* and *Rhizodus* see Thomson, 1964.

Rhizodus sp.

1909a *Strepsodus* sp., Lambe, p. 177 (c)
1910 *Strepsodus* sp., Lambe, p. 14 (c)
1929 *Strepsodus*—Bell, p. 35 (c)
1961 *Strepsodus* sp., Baird, p. 360 (c)

Localities: 1. Horton-Windsor District, Nova Scotia. Coal Measures.

2. Hortonville, Nova Scotia. Coal Measures.

3. Near Parrsboro, Nova Scotia. Upper Parrsboro formation (Riversdale group). Lower Pennsylvanian.

Material: National Museum of Canada, Ottawa; Baird Collection.

Remarks: It is now clear that *Strepsodus* is synonymous with *Rhizodus*.

Megalichthys or *Rhizodus* sp.

1876 *Megalichthys* sp., Robb, p. 199 (c)
1913 *Rhizodus* sp., Bell, p. 343 (c)

1930 *Megalichthys* sp., Bell, Hay, p. 676
1959 *Rhizodus* sp., Copeland, p. faunal list (c)

Locality: Joggins and Sydney Coal Fields, Nova Scotia. Coal Measures. According to Copeland (1959) from facies B, Cumberland group (Early Westphalian B). Coal Measures.

1961 *Megalichthys* sp., Baird, p. 340 (c)

Locality: Near Parrsboro, Nova Scotia. Upper Parrsboro formation (Riversdale group). Lower Pennsylvanian.

1940 Rhizodopsoid fish scales, Bell, p. 49 (c)

Locality: Pictou Coal Field, Nova Scotia. Coal Brook and Thornburn members. Coal Measures.

1868 *Psammodus* sp., Dawson, p. 209, fig. 54 (c)
1905 *Psammodus* sp., Lambe, pp. 35, 41 (c)
1959 *Psammodus* sp., Copeland, p. faunal list (c)

Localities: 1. Joggins, Nova Scotia. From facies B, Cumberland group (early Westphalian B). Coal Measures.
2. Pictou, Nova Scotia. Coal Measures.
Remarks: There has been great confusion concerning the genera *Megalichthys* and *Rhizodus*; for a competent discussion see Thomson, 1964.

Rhizodont

1915 Tooth with rhizodont structure, Kiaer, p. 48, pl. 8, fig. 6 (c)

Locality: East side of Goose Fiord, Ellesmere Island, Northwest Territories. In a light hard sandstone. Devonian.
Material: Palaeontological Museum, Oslo, from Goose Fiord.

Genus *Rhizodopsis* Young 1866

Rhizodopsis sp.

Locality: Coal Measures, Nova Scotia.
Material: British Museum (Natural History), scales.

Genus *Elpistostege* Westoll 1938

Elpistostege watsoni Westoll (C)

1938 *Elpistostege watsoni* Westoll, p. 127, figs. 1, 2b (c)
1939 *Elpistostege watsoni* Westoll: Stensiö & Jarvik, p. 281
1943 *Elpistostege* Westoll, fig. 3B
1947 *Elpistostege watsoni* Westoll: Romer, p. 89
1952 *Elpistostege watsoni* Westoll: Jarvik, p. 83 (footnote)
1955 *Elpistostege watsoni* Westoll: Jarvik, p. 151, fig. 4B
1957 *Elpistostege watsoni* Westoll: Ørvig, p. 372

Locality: Presumably Maguasha West, on the southwest side of the Gaspé Peninsula, on the shore of Escuminac Bay, Quebec. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Type: Mainly the head, Westoll Collection, Newcastle-upon-Tyne, England.

Remarks: This animal has been varyingly classified as a primitive tetrapod or as a crossopterygian. Although it is included in this catalogue, *Elpistostege watsoni* is undoubtedly an amphibian, as Westoll (1938) concluded.

Genus *Thursius* Traquair 1888

Thursius ? *clappi* Romer (C)

1942 *Thursius* ? *clappi* Romer, p. 261, pl. 1, fig. 1 (c)
1948 *Thursius* ? *clappi* Romer: Jarvik, p. 199 (c)
1957 *"Thursius" clappi* Romer, Ørvig, p. 372

Locality: Maguasha West, on the southwest side of the Gaspé Peninsula, on the shore of Escuminac Bay, Quebec. From zone 5 (Russell, 1939). Upper Devonian (Kindle, 1930; Alcock, 1935).

Type: Museum of Comparative Zoology, Harvard, Cambridge, no. 7196, a nearly complete fish from Maguasha West.

Remarks: This species does not belong to the genus *Thursius* and probably is not an osteolepid.

Order POROLEPIFORMES

Family Holoptychidae

Genus *Glyptolepis* Agassiz 1844

Glyptolepis cf *paucidens* Agassiz

1915 *Glyptolepis* cf *paucidens* Agassiz: Kiaer, p. 45, pl. 8, figs. 1, 2 (c)
1929 *Glyptolepis paucidens* ? Agassiz: Hay, p. 674
1963 *Glyptolepis* sp. McLaren (in Fortier *et al.*), p. 329 (c)

Locality: Fish horizon, Skrap Valley, Ellesmere Island, Northwest Territories. Oske Bay formation (Sandstone series D). Lowermost, Upper Devonian.

Material: Palaeontological Museum, Oslo.

Glyptolepis quebecensis Whiteaves (C)

1881a *Glyptolepis* scales, Whiteaves, p. 24 (c)
1881d *Glyptolepis* ? *microlepidotus* Agassiz: Whiteaves, p. 32 (c)
1881d *Glyptolepis* ? *leptopterus* Agassiz: Whiteaves, p. 33 (c)
1883 *Glyptolepis microlepidotus* ? Agassiz: Ells, p. 10D
1889a *Glyptolepis quebecensis* Whiteaves, p. 77, pl. 5, fig. 4 (c)
1890 *Glyptolepis quebecensis* Whiteaves: Traquair, p. 16
1891 *Holoptychius (Glyptolepis) quebecensis* (Whiteaves) Woodward, p. 336
1893b *Glyptolepis quebecensis* Whiteaves: Traquair, p. 265
1899 *Glyptolepis quebecensis* Whiteaves: Whiteaves, p. 226 (name only)
1902 *Holoptychius quebecensis* (Whiteaves): Hay, p. 358
1905 *Holoptychius quebecensis* (Whiteaves): Lambe, pp. 17, 34, 42
1907 *Holoptychius quebecensis* (Whiteaves): Eastman, p. 17
1907 *Holoptychius (Glyptolepis) quebecensis* (Whiteaves): Whiteaves, p. 253 (c)

1908 *Glyptolepis quebecensis* Whiteaves: Eastman, p. 238 (name only)
1908 *Holoptychius quebecensis* (Whiteaves): Eastman, p. 280
1913 *Holoptychius quebecensis* (Whiteaves): Clarke, p. 115
1915 *Glyptolepis quebecensis* Whiteaves: Kiaer, p. 46
1918 *Holoptychius quebecensis* (Whiteaves): Hussakof & Bryant, p. 174, non. fig. 58
1919 *Holoptychius quebecensis* (Whiteaves): Bryant, p. 5, pl. 16, fig. 2, pl. 18, fig. 4, non. pl. 11, fig. 1
1929 *Glyptolepis quebecensis* Whiteaves: Hay, p. 674
1932 *Holoptychius quebecensis* (Whiteaves): Save Söderbergh, p. 34
1935 *Holoptychius quebecensis* (Whiteaves): Alcock, p. 88 (name only) (c)
1942 *Glyptolepis quebecensis* Whiteaves: Romer, p. 217
1950 *Holoptychius quebecensis* (Whiteaves): Gross, p. 83
1957 *Glyptolepis* sp. indet. aff.? *quebecensis* Whiteaves: Ørvig, pp. 367, 414, figs. 5, 6, 10, 11

Locality: Maguasha West, on the southwest side of the Gaspé Peninsula, on the shores of Escuminac Bay, Quebec. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Type: National Museum of Canada, Ottawa, no. 4328 in counterpart, a nearly complete fish (poor head) from Maguasha West.

Remarks: Since many members of the genus *Glyptolepis* grow to a considerable size, it is probable that the type specimen of *Glyptolepis quebecensis* Whiteaves is an immature individual, as already suggested by Whiteaves, 1889a, p. 78, and the other specimen mentioned by Whiteaves, 1889a, p. 78, as *Glyptolepis* belongs to the adult of the same species. With this in mind it is clear that what Whiteaves described in 1889a as *Glyptolepis quebecensis* does in fact belong to the genus *Glyptolepis* and not *Holoptychius.*

Genus *Holoptychius* Agassiz 1839

Holoptychius scheii Kiaer (C)

1915 *Holoptychius scheii* Kiaer, pp. 44, 47, pl. 8, figs. 3, 4, pl. 18, fig. 8 (c)
1929 *Holoptychius scheii* Kiaer: Hay, p. 674
1957 *Holoptychius* spp., Ørvig, p. 377
1963 *Holoptychius*, McLaren (in Fortier *et al.*), p. 329 (c)

Locality: From the Fish horizon, Skrap Valley, Ellesmere Island, Northwest Territories. Okse Bay formation (Sandstone series D of Kiaer, 1915). Lower, Upper Devonian.

Type: Palaeontological Museum, Oslo, from Skrap Valley.

Holoptychius cf *tuberculatus* Newberry (C)

1915 *Holoptychius* cf *tuberculatus* ? Newberry, Kiaer, p. 45 (c)
1929 *Holoptychius* cf *tuberculatus* ? Newberry: Hay, p. 674
1957 *Holoptychius* spp., Ørvig, p. 378

Locality: Fish horizon, Skrap Valley, Ellesmere Island, Northwest

Territories. Okse Bay formation (Sandstone series D of Kiaer 1915). Lower, Upper Devonian.

Material: Palaeontological Museum, Oslo, from Skrap Valley.

Holoptychius sp. nov. (C)

1918 *Holoptychius quebecensis* (Whiteaves): Hussakof & Bryant, p. 174, fig. 58 (c)
1919 *Holoptychius quebecensis* (Whiteaves): Bryant, p. 5, pl. 11, fig. 1
1955 *Holoptychius quebecensis* (Whiteaves): Jarvik, fig. 2
1957 *Holoptychius* sp. indet. aff.? *quebecensis* (Whiteaves): Ørvig, pp. 368, 416, figs. 1K, 12 & 13

Material: Specimen E 2529 and counterpart E 2530, gular region and scales in the Buffalo Museum of Science, Buffalo, N.Y. (figured by Hussakof & Bryant, 1918, fig. 58, and by Bryant, 1919, pl. 11, fig. 1). Specimen no. 38.71.10672 in the Dartmouth College, Hanover (figured by Jarvik, 1955, fig. 2, and Ørvig, 1957, figs. 1K, 12). Specimen no. P.850 in the Swedish Museum of Natural History, Stockholm.

Remarks: Ørvig, 1957, was the first person to realize that much of the material in the world's Museums labelled *Glyptolepis (Holoptychius) quebecensis* contained in fact two distinct genera (viz. *Glyptolepis* and *Holoptychius*) and the list of material given above comes from his 1957 paper.

Holoptychius sp. (C)

1876 *Holoptychius* sp., Robb, p. 199 (c)

Locality: Sydney Coal Field, Nova Scotia. Coal Measures.

Material: National Museum of Canada, Ottawa.

Remarks: No member of the genus *Holoptychius* has been recorded from so high in the geological record. This presumably is a *Rhizodus* sp.

Holoptychius sp. or *Glyptolepis* sp.

1915 "Teeth with Dendrodont structure", Kiaer, p. 47, pl. 8, figs. 7, 9 (c)
1915 *Glyptolepis* cf *paucidens* ? Kiaer, p. 48, pl. 8, fig. 8

Locality: Fish horizon, Skrap Valley, Ellesmere Island, Northwest Territories. Okse Bay formation (Sandstone series D, middle part). Lowermost, Upper Devonian.

Material: Palaeontological Museum, Oslo, from the Upper Devonian of Skrap Valley.

Genus *Onychodus* Newberry 1857

Onychodus sigmoides Newberry

1857 *Onychodus sigmoides* Newberry, p. 119
1862 *Onychodus sigmoides* Newberry: Newberry, p. 74
1862 *Onychodus hopkinsi* Newberry, p. 77, fig. 3 (errore)
1873 *Onychodus sigmoides* Newberry: Newberry, p. 299, pl. 27, and fig. on p. 301
1874 *Onychodus sigmoides* Newberry: Newberry, p. 192
1877 *Onychodus sigmoides* Newberry: Whiteaves, p. 319 (c)

1878 *Onychodus sigmoides* Newberry: Orton, pp. 610, 625
1878 *Onychodus hopkinsi* Newberry: Orton, p. 636
1889 *Onychodus sigmoides* Newberry: Newberry, p. 56, pl. 36, figs. 1–4, pl. 37, figs. 1–10
1890 *Onychodus sigmoides* Newberry: Newberry, p. 56, pls. 26, 27
1891 *Onychodus sigmoides* Newberry: Woodward, p. 392
1899 *Onychodus sigmoides* Newberry: Eastman, p. 321, figs. 2, 3
1902 *Onychodus sigmoides* Newberry: Hay, p. 363
1903 *Onychodus sigmoides* Newberry: Claypole, p. 320
1904 *Onychodus sigmoides* Newberry: Clarke & Luther, p. 42
1905 *Onychodus sigmoides* Newberry: Lambe, pp. 16, 34, 43 (c)
1906 *Onychodus sigmoides* Newberry: Arey, p. 425, fig. 48
1907 *Onychodus sigmoides* Newberry: Eastman, pp. 14, 16, 168, 232, pl. 1, fig. 3
1908 *Onychodus sigmoides* Newberry: Hussakof, p. 57
1909 *Onychodus sigmoides* Newberry: Stauffer, pp. 88, 124, 169
1911 *Onychodus sigmoides* ? Newberry: Cleland, p. 157, pl. 47, fig. 5
1911 *Onychodus sigmoides* Newberry: Koken (in Zittel), p. 88, fig. 156
1912 *Onychodus sigmoides* Newberry: Lambe, p. 4 (name only)
1915 *Onychodus sigmoides* Newberry: Stauffer, p. 248 (c)
1918 *Onychodus sigmoides* Newberry: Hussakof & Bryant, pp. 10, 15, 17, 178, pl. 58, text-fig. 59
1922 *Onychodus sigmoides* Newberry: Branson, pp. 35, 164, pl. 31, fig. 3
1923 *Onychodus sigmoides* Newberry: Zittel, Broili & Schlosser, p. 87, fig. 156
1926 *Onychodus sigmoides* Newberry: Moodie, p. 66
1929 *Onychodus sigmoides* Newberry: Hay, p. 680
1944 *Onychodus sigmoides* Newberry: Wells, p. 43, pl. 3, figs. 25, 28, 29, 32, 34–38, pl. 4, figs. 19, 20, pl. 8, figs. 7–11
1957 *Onychodus sigmoides* Newberry: Ørvig, pp. 381, 396, fig. 7, c–e

Localities: 1. From the Amherstburg Stone Company Quarry, 1¼ miles northeast of Amherstburg which lies on the Detroit River, 3 miles north of Lake Erie, Essex County, Ontario. Onondagan. Middle Devonian.

2. Also recorded from the Corniferous Limestone of Ontario. Middle Devonian.

Type: Series of syntypes in the American Museum of Natural History, New York, nos. 256, 257, 295, 296, from the Corniferous Limestone, Ohio.

Onychodus sp.

1892 *Onychodus* sp., Whiteaves, p. 356 (c)
1892 *Onychodus* sp., Tyrrell, pp. 192, 209 (c)
1905 *Onychodus* sp., Lambe, pp. 34, 43

Locality: The north shore of Manitoba Island, Lake Manitoba, Manitoba. From the "Cuboides Zone". Upper Division of the Middle Devonian.

Material: National Museum of Canada, Ottawa, from Manitoba Island.

Order COELACANTHIFORMES

Protocoelacanthid (C)

1943a Proto-coelacanth, Westoll, p. 78 (c)
1943b Coelacanth head and squamation, Rhipidistian body, Westoll, p. 391
1949 Primitive coelacanth, Westoll, p. 178
1952 Rhipidistian-like form, Schaeffer, pp. 72, 73
1957 Crossopterygii inc. sed., Ørvig, p. 372
1960 Proto-coelacanth, Westoll, p. 569

Locality: Presumably Maguasha West, on the southwest side of the Gaspé Peninsula, on the shore of Escuminac Bay, Quebec. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Type: Westoll Collection, Geology Department, Newcastle-upon-Tyne, England; from Escuminac Bay.

Family Coelacanthidae

Genus *Coelacanthus* Agassiz 1836

Coelacanthus banffensis Lambe (C)

1916 *Coelacanthus banffensis* Lambe, p. 38, pl. 1 (c)
1917 *Coleacanthus banffensis* Lambe: Burling, p. 293
1925 *Coelacanthus banffensis* Lambe: Raymond, p. 553 (name only)
1929 *Coelacanthus banffensis* Lambe: Hay, p. 681

Localities: 1. Railway cutting of the C.P.R. a few hundred yards west of Massive, Alberta (82-0-4). Spray River formation. Lower Triassic.

2. From 2 miles east of Castle Mountain Railway Station, on the trail to Johnson Creek, 2 miles north of Forest Rangers Cabin, Alberta.

Type: National Museum of Canada, Ottawa, nos. 756 and counterpart 756a, from Massive, Alberta.

Remarks: This species looks very much as if it belongs in the genus *Whiteia.*

Coelacanthus sp.

1884 *Coelacanthus* sp., Fletcher, p. 71H (c)

Locality: The north side of Finlay Point, Inverness County, Nova Scotia. Upper Carboniferous.

Material: National Museum of Canada, Ottawa.

Coelacanth remains (C)

Locality: Sanwapta Pass, Mount Athabasca, Alberta. Upper Devonian.

Material: University of Alberta, Geological Museum, Edmonton, Alberta.

Genus *Whiteia* Moy-Thomas 1935

Whiteia sp. ?

Locality: East Slate Creek, south of Wapiti Lake in the Ganoid Range, British Columbia. 20′ above the base of the Toad Grayling formation. Lower Triassic (Spray River) (Laudon *et al.* 1949, Forbes &

McGugan, 1959). Also from the scree slopes above Wapiti Lake. Lower Triassic (Spray River).

Material: The American Museum of Natural History, New York, and the National Museum of Canada, Ottawa.

Sub-Class DIPTERI

Order DIPTERIFORMES

Family Dipteridae

Genus *Dipterus* Sedgwick & Murchison 1828

Dipterus sp.

1913 *Dipterus* sp., Clarke, p. 98 (c)
1956 *Dipterus* sp., Denison, p. 413

Locality: East coast of the Gaspé Peninsula. From the rock wall between the north and south beaches, at the steamboat wharf or the north beach, Percé, Quebec. In a grey steeply inclined shale of the Mont Joli formation. Early Devonian (Helderbergian).

Material: National Museum of Canada, Ottawa.

Dipnoan indet.

Locality: Deer Lake, Newfoundland. Lower Carboniferous.

Material: British Museum (Natural History).

Order CTENODONTIFORMES

Family Ctenodontidae

Genus *Ctenodus* Agassiz 1838

Ctenodus murchisoni Ward

1843 *Ctenodus alatus* Agassiz, *3*, p. 174 (name only)
1844 *Ctenodus murchisoni* Agassiz, *1*, p. 35 (name only)
1890 *Ctenodus murchisoni* Ward, p. 156
1891 *Ctenodus murchisoni* Ward: Woodward, p. 255, pl. 4, fig. 4
1938 *Ctenodus murchisoni* Ward: Rode, p. 615, pl. 18
1941a *Ctenodus murchisoni* Ward: Sternberg, p. 836, pl. 1, figs. 1–3 (c)

Locality: From the roof of the Phalen Coal seam (Bell, 1938), Glace Bay, Nova Scotia. In a horizon full of the freshwater pelycopod *Anthraconauta phillipsi*. Upper Westphalian.

Type: British Museum (Natural History), no. P.518, dental plate from Leebotwood, Shropshire. Coal Measures.

Canadian Material: National Museum of Canada, Ottawa, no. 8813 from the Phalen Coal seam, Glace Bay.

Ctenodus plicatus (Dawson) (C)

1868 *Conchodus plicatus* Dawson, p. 299, figs. 53, 54 (c)
1891 *Ctenodus plicatus* (Dawson) Woodward, p. 255
1902 *Conchodus plicatus* Dawson: Hay, p. 352
1905 *Conchodus plicatus* Dawson: Lambe, p. 42
1908 *Conchodus plicatus* Dawson: Eastman, p. 234
1929 *Conchodus plicatus* Dawson: Hay, p. 664

1934 *Ctenodus plicatus* (Dawson): Romer & Smith, p. 702
1938 *Ctenodus plicatus* (Dawson): Rode, p. 617
1941a *Sagenodus plicatus* (Dawson) Sternberg, p. 837, pl. 1, fig. 4, text-fig. 1 (c)
1959 *Sagenodus plicatus* (Dawson): Copeland, p. faunal list (c)

Locality: South Joggins, Nova Scotia. Presumably facies B, Cumberland group (early Westphalian). Coal Measures (Bell, 1927).

Type: Dawson Collection, Redpath Museum, McGill University, Montreal, no. 3073, a left palatal plate from South Joggins.

Ctenodus sp.

1913 *Conchodus* sp., Bell, p. 340 (c)
1959 *Conchodus* sp., Copeland, p. faunal list (c)

Locality: South Joggins, Nova Scotia. Presumably facies B, Cumberland group (Early Westphalian). Coal Measures.

Material: National Museum of Canada, Ottawa.

Genus *Sagenodus* Owen 1867

Sagenodus cristatus (Dawson) (C)

1868 *Ctenoptychius cristatus* Dawson, p. 209 fig. 52 (c)
1889 *Ctenoptychius cristatus* Dawson: Woodward, p. 56
1902 *Ctenoptychius cristatus* Dawson: Hay, p. 282
1903a *Ctenoptychius cristatus* Dawson: Whiteaves, p. 29 (c)
1905 *Ctenoptychius cristatus* Dawson: Lambe, pp. 19, 35, 41
1913 *Ctenoptychius cristatus* Dawson: Bell, pp. 340, 343 (c)
1929 *Ctenoptychius cristatus* Dawson: Hay, p. 552

Locality: South Joggins, Nova Scotia. From the 18th of the coal seams and from facies B, Cumberland group. Early Westphalian.

Type: Redpath Museum, McGill University, Montreal (Dawson Collection), from South Joggins.

Remarks: This species differs only slightly from *Callopristodus pectinatus* (Agassiz).

Genus *Uronemus* Agassiz 1844

Uronemus n. sp. (C)

Locality: Deer Lake, Newfoundland. Lower Carboniferous.

Material: British Museum (Natural History).

Order PHANEROPLEURIFORMES

Family Fleurantiidae

Genus *Fleurantia* Graham-Smith & Westoll 1937

Fleurantia denticulata Graham-Smith & Westoll (C)

1893 *Phaneropleuron curtum* Whiteaves: Woodward, p. 241, text-fig.
1937 *Fleurantia denticulata* Graham-Smith & Westoll, p. 241, pls. 1, 2 (c)
1944 *Fleurantia denticulata* Graham-Smith & Westoll: Bystrow, p. 31, text-fig.

1949 *Fleurantia* - Westoll, p. 149
1954 *Fleurantia denticulata* Graham-Smith & Westoll: Waterston, p. 54
1957 *Fleurantia denticulata* Graham-Smith & Westoll: Ørvig, p. 372, fig. 1M

Locality: Maguasha West, on the southwest side of the Gaspé Peninsula, on the shores of Escuminac Bay, Quebec. From 39′ above the base of the fish-bearing series. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939)

Type: 6 syntypes, 5 in counterpart, British Museum (Natural History), nos. P24743-48, 3 specimens in counterpart, from Maguasha West and P6785 in counterpart also from Escuminac Bay. One other specimen in counterpart in the Royal Scottish Museum (nos. 1897.51.169 and 1897.51.170) from Escuminac Bay.

Family Scaumenacidae

Genus *Scaumenacia* Traquair 1893

Scaumenacia curta (Whiteaves) (C)

1881d *Phaneropleuron curtum* Whiteaves, p. 29 (c)
1883 *Phaneropleuron curtum* Whiteaves: Ells, p. 10D (c)
1883 *Phaneropleuron curtum* Whiteaves: Claypole, p. 278
1887 *Phaneropleuron curtum* Whiteaves: Whiteaves, p. 108, pl. 10, figs. 2, 2a–e (c)
1889a *Phaneropleuron curtum* Whiteaves: Whiteaves, pp. 83, 92, pl. 5, fig. 3, pl. 10, fig. 1
1890 *Phaneropleuron curtum* Whiteaves: Jaekel, p. 2, woodcut
1891 *Phaneropleuron curtum* Whiteaves: Woodward, p. 248
1893b *Scaumenacia curta* (Whiteaves) Traquair, p. 262
1895 *Scaumenacia curta* (Whiteaves): Traquair, p. 252, pl. 5, fig. 6
1898 *Scaumenacia curta* (Whiteaves): Woodward, p. 22, fig. 20
1899 *Phaneropleuron curtum* Whiteaves: Whiteaves, p. 226 (name only)
1900 *Scaumenacia curta* (Whiteaves): Traquair, p. 506
1902 *Scaumenacia curta* (Whiteaves): Hay, p. 353
1905 *Scaumenacia curta* (Whiteaves): Lambe, p. 5
1907 *Scaumenacia curta* (Whiteaves): Whiteaves, p. 253, pl. 3 (c)
1907 *Scaumenacia curta* (Whiteaves): Eastman, p. 17
1907 *Phaneropleuron curtum* Whiteaves: Matthew, p. 9
1908 *Scaumenacia curta* (Whiteaves): Eastman, pp. 213, 235, 280, fig. 35
1912 *Scaumenacia curta* (Whiteaves): Lambe, p. 7 (c)
1912 *Scaumenacia curta* (Whiteaves): Hussakof, p. 134, pls. 2, 3, text-figs. 3–6
1912 *Scaumenacia curta* (Whiteaves): Abel, p. 636, fig. 470
1912 *Scaumenacia curta* (Whiteaves): Patten, pp. 386, 389, figs. 261F, 264
1913 *Scaumenacia curta* (Whiteaves): Clarke, p. 113 (c)
1913 *Scaumenacia curta* (Whiteaves): Pompeckj, p. 1134, fig. 40
1915 *Scaumenacia curta* (Whiteaves): Gregory, p. 323, fig. 1

1916 *Scaumenacia curta* (Whiteaves): Watson & Day, p. 38, fig. 8D
1918 *Scaumenacia curta* (Whiteaves): Hassakof & Bryant, p. 171, pl. 57, figs. 3, 4, text-fig. 57
1919 *Scaumenacia curta* (Whiteaves): Abel, p. 179, fig. 7
1923 *Scaumenacia curta* (Whiteaves): Zittel, Broili & Schlosser, p. 81, fig. 138
1925 *Scaumenacia curta* (Whiteaves): Stensiö, p. 1
1927 *Canadipterus* - Jaekel, fig. 62
1929 *Canadipterus* - Jaekel, p. 18, fig. 19
1929 *Scaumenacia curta* (Whiteaves): Hay, p. 665
1935 *Scaumenacia curta* (Whiteaves): Alcock, p. 88 (c)
1936 *Scaumenacia curta* (Whiteaves): Graham-Smith, p. 602, fig. 19
1937 *Scaumenacia curta* (Whiteaves): Graham-Smith & Westoll, p. 256, text-fig. 11d
1937a *Scaumenacia curta* (Whiteaves): Westoll, p. 367, text-fig. 3b
1947 *Scaumenacia curta* (Whiteaves): Stensiö, p. 138, fig. 32
1949 *Scaumenacia curta* (Whiteaves): Westoll, p. 143, text-fig. 6
1950 *Scaumenacia curta* (Whiteaves): Jarvik, p. 4, text-fig. 33G
1951 *Scaumenacia curta* (Whiteaves): Ørvig, p. 433
1951 *Scaumenacia curta* (Whiteaves): Save-Söderbergh, fig. 4E
1957 *Scaumenacia curta* (Whiteaves): Ørvig, p. 372, fig. 1N

Locality: Maguasha West, on the southwest side of the Gaspé Peninsula, on the shore of Escuminac Bay, Quebec. Upper Devonian (Kindle, 1930; Alcock, 1935; Russell, 1939).

Types: National Museum of Canada, Ottawa, syntypes nos. 4420 and 4422, nearly complete fish, from Maguasha West.

FISH *remains*

1889b Selachian tooth, Whiteaves, p. 184 (c)
1905 Selachian tooth and pectoral girdle, Lambe, pp. 37, 41 (c)

Localities: 1. Battle River, Saskatchewan (T. 46, R. 3, W. of 4th Meridian). Fort Pierre group. Upper Cretaceous.

2. Sounding Creek, Assiniboia, Saskatchewan. Fort Pierre group. Upper Cretaceous.

Material: National Museum of Canada, Ottawa, from both above localities.

1903 Asterospondylic vertebrae, Whiteaves, pp. 314, 407, pl. 44, fig. 1 (c)
1905 Asterospondylic vertebrae of Whiteaves, Lambe, pp. 37, 41

Locality: Puntledge or Comox River, Vancouver Island, British Columbia. Nanaimo group. Cretaceous.

Material: National Museum of Canada, Ottawa.

1900 Teleost scales, Whiteaves, p. 266 (c)

Locality: South Island, Skidegate Inlet, Queen Charlotte Islands, British Columbia. Cretaceous.

Material: National Museum of Canada, Ottawa, from South Island.

1903 Vertebrae of a hemibranch, Whiteaves, pp. 314, 407 (c)
1905 Vertebrae of a hemibranch, Lambe, pp. 37, 44

Locality: Hornby Island, off Vancouver Island, British Columbia. Nanaimo group. Cretaceous.

Material: National Museum of Canada, Ottawa, from Hornby Island.

1915 Teleostean fish, Lambe, p. 120 (c)

Locality:Pembina River, Manitoba (S.W. corner of S. 8, T. 1, R. 8). Niobrara. Upper Cretaceous.

Material: National Museum of Canada, Ottawa.

1935 Teleostomi vertebrae, Russell (in Fraser *et al.*), p. 129 (c)

Locality: On a hill north of Old Wood Mountain trail, Saskatchewan (1 N ½. S. 24, T. 4, R. 3, W. of 3rd Meridian). Wood Mountain gravels, Miocene.

1926 Teleost remains, Sternberg, p. 103 (c)
1941 Teleost remains, Sternberg, p. 188 (c)

Locality: Edmonton formation, Alberta (82-P-10, 15). Upper Cretaceous.

1944 Fish remains, Feniak, p. 69 (c)

Localities: 1. From the Athadome no. 2 well (L. sd. 3, S. 15, T. 66, R. 22, W. of 4th Meridian), Athabasca-Barrhead map-area, Alberta. La Biche formation.

2. From Muskeg Creek along the Athabasca River (L. sd. 2, S. 1, T. 66, R. 23, W. of 4th Meridian), Athabasca-Barrhead map-area, Alberta. La Biche formation.

1944 Fish plate, Crombie, p. 20 (c)

Locality: Alexo Map area, Alberta. Banff formation.

1949 Shark tooth, Wickenden, p. 13 (c)

Locality: SE. ¼, S. 19, T. 80, R. 17, W. of 4th Meridian, on the Athabasca River, Alberta. In sand-shaly nodules of the Pelican formation. Cretaceous.

1950 Shark teeth, Jeletzky, p. 46 (c)

Locality: Tatchu Point, British Columbia. Sooke formation. Miocene?

1950 Chertified fish ? bones, Beales, p. 41 (c)

Locality: 565′ from the base of the Rocky Mountain formation, southwestern Alberta.

1950 Fish vertebrae and scales, Erdman, pp. 82, 83, 950 (c)

Localities: 1. Ram River, 3,500′ up from the mouth of Fall Creek, Alberta. Fernie group. Lower Cretaceous.

2. Along Dizzy Creek, elevation 3950′, Alberta. Blackstone group. Upper Cretaceous.

1950 Fish plate, Erdman, p. 80 (c)

Locality: North Saskatchewan River Gap, east of Dutch Creek and at 4,100′, Alberta. Banff formation. Mississippian.

1951 Fish scales, Wickenden, pp. 9, 20, 23, 24 (c)

Localities: 1. Along the Peace River, on the west bank, 2½ miles upstream from Peace River Town (SW ¼ S. 19, T. 83, R. 21, W. of 5th Meridian), Alberta. From the Shaftesbury formation. Lower Cretaceous.

2. Along the northeast side of the Peace River (NW ¼ S. 26, and NE ¼ S. 27, T. 87, R. 20, W. of 5th Meridian), Alberta. From the Cadotte Member of the Peace River formation. Lower Cretaceous.

3. Along the Peace River, 1 mile upstream from the mouth of Cadotte River, Alberta. From the Shaftesbury formation. Lower Cretaceous.

1952 Fish Remains (Placoderms), Anon (Denison?), p. 4 (c)

Locality: The shores of Northumberland Straits, Nova Scotia. From red and green shales and sandstones. Lower Devonian.

1952 Fish scales, Thorsteinsson, pp. 26, 30 (c)

Locality: Pearl Creek which is a tributary of the Sulphur River, Alberta. From 217′ above the lower contact of the shales of the Fort St. John group. Latest Albian. Lower Cretaceous.

1955 Fish fragments, Belyea, p. 20 (c)

Locality: Duvernay Well section, Alberta. Devonian.

1959 Shark tooth, Wagner, pp. 16, 59 (c)

Localities: 1. From ditch on the west side of Clover Valley road, 3/10 mile south of Hjorth road (NE., S. 6) Surrey municipality, British Columbia. Sunnyside formation. Pleistocene.

2. Ditch in the Tsawwassen Indian Reserve (Lot 26, S. 3, T. 5). Delta municipality, British Columbia. Sunnyside formation. Pleistocene.

1959 Fossil fish scales, Baird, map unit 22 (c)

Locality: 16 miles north of Deer Lake on the Upper Humber River, Newfoundland. From the Windsor group. Carboniferous.

1960 Fish scales, Stott, p. 12 (c)

Locality: From several small streams flowing down the western slopes of the Liard Range, Northwest Territories (Fort Liard-Kotaneelu region). Sikanni formation. Lower Cretaceous.

1963 Fish teeth, Norris, p. 98 (c)

Locality: The north bank of the Clearwater River, 13.3 miles downstream from the mouth of High Hill River, Alberta. From argillaceous limestones of the Calumet Member. Upper Devonian.

1963 Fish teeth, Norris, p. 134 (c)

Locality: In the vicinity of Vermilion Falls, Vermilion Chutes area, Peace River, Alberta. In the Mikkwa formation. Upper Devonian.

1963 Fish remains, Fortier *et al.*, p. 296 (c)

Locality: Southern Goose Fiord, southern Ellesmere Island, Northwest Territories. From the Douro formation. Silurian.

1963 Fish remains, Fortier *et al.*, p. 301 (c)

Locality: North side of Rendalen Valley, southern Ellesmere Island, Northwest Territories. From the Devon Island formation. Silurian.

1963 Fish plate (Coccosteid?), McLaren (in Fortier *et. al.*,), p. 609 (c)

Locality: Twilight Creek, Stuart River area, Bathurst Island, Northwest Territories. In the lowest 90′ of the limestones of the Eids formation. Middle Devonian.

1963 Fish scales, Stott, p. 48 (c)

Localities: Vimy, Sturrock, Muskiki, Dowling and Haven Members in the Rocky Mountain foothills. Cretaceous.

1963 Shark teeth, Stott, p. 102 (c)

Locality: Grave Flats Map area, Thistle Creek, Alberta. Wapiabi formation. Cretaceous.

1963 Large Ganoid fish, Pelletier, pp. 4, 26 (c)

Localities: 1. Needham Creek, 2 miles west of junction with Graham River, 80 miles west of Fort St. John, British Columbia. From siltstones near base of Toad Grayling formation. Lower Triassic.

2. Wapiti Lake, British Columbia (see also Laudon *et al.* 1949, Forbes & McGugan, 1959).

1964a Rich assemblage of Siluro-Devonian fossil fish, including giant ostracoderms, Dineley.

Locality: North Coast of Somerset Island, Northwest Territories.

Unrecorded Localities: 1. Teleostean remains, 10 miles below Pelican Rapids on the Athabasca River, Alberta. Lower Cretaceous.

2. Fossil fish remains from the black siliceous limestones at Banff, Alberta. Comparable in part to the Phosphoria fauna of Wyoming. Carboniferous.

3. Acanthodian remains, Spearhill, Manitoba.

4. Palaeoniscid remains, Kettle Point, Lake Huron, Ontario. In the Kettle Point shales.

5. Teleost vertebrae from the Don Valley Brickyard, Toronto. Interglacial.

6. Arthrodire remains, Jura Creek, Alberta. Exshaw formation. Mississippian. (Langston, private communication.)

7. Teleost remains, Bad Heart River, Alberta (T. 75, R. 2, W. of 6th Meridian), Puskwaskau shale. Upper Cretaceous. Also Kakuk Creek in the Smoky River area, Alberta. Senonian.

APPENDIX

"Protochordata"

Genus *Scaumenella* Graham-Smith 1935

Scaumenella mesacanthi Graham-Smith (C)

1935 *Scaumenella mesacanthi* Graham-Smith, p. 473, fig. 1 (c)

1939 *Scaumenella mesacanthi* Graham-Smith: Russell, p. 8 (c)
1957 *Scaumenella mesacanthi* Graham-Smith: Ørvig, p. 372

Locality: Maguasha West, on the southwest side of the Gaspé Peninsula, on the shore of Escuminac Bay, Quebec. From 39′ above the lower conglomerate, in a band 6″ thick containing *E. foordi* Whiteaves and *Triazeugacanthus affinis* (Whiteaves), 2″ above the base of this band). Upper Devonian (Kindle, 1930, Alcock, 1935, Russell, 1939).

Syntypes: Slab in the British Museum (Natural History), P.19056, containing numerous individuals and other slabs elsewhere.

Remarks: Although this catalogue is concerned solely with fossil fishes, there is but one fossil protochordate recorded from the Upper Devonian of Canada (*Scaumenella mesacanthi*).

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